

MODEL 900 SERIES

OPERATOR'S MANUAL

**DEUTZ
ALLIS**

LAWN & GARDEN TRACTORS

**912-H, 914-H, 916-H,
917-H and 919-H**



TRACTORS

1691121
1691122
1691123
1691124
1691125

TRACTORS W/Mower

1691131
1691132
1691133
1691134
1691136

MOWERS

42" 1691137
48" 1691138

DEALER'S PREDELIVERY SERVICE GUIDE FOR 900 SERIES TRACTOR**DETAILS OF ITEMS LISTED BELOW ARE COVERED IN THIS MANUAL****CHECK BEFORE OPERATING UNIT**

- ☐ Shipping Damage Corrected
- ☐ Fill Battery with Electrolyte & Fully Charge
- ☐ Engine Oil Level Checked (Add When Needed)
- ☐ Hydrostatic Oil Level Checked
- ☐ Bevel Gear Box Oil Level Checked
- ☐ Final Drive Oil Level Checked
- ☐ Check & Tighten Steering Wheel
- ☐ Torque Rear Wheels

OIL LEAKS

- ☐ Tractor Operated
- ☐ Check for Oil Leaks After Engine Warms Up
- ☐ Check for Hydraulic Oil Leaks
- ☐ Check for Final Drive Oil Leaks

ENGINE

- ☐ Check Timing
- ☐ Check High & Low Idle Speeds
- ☐ Check Governor Response
- ☐ Air Cleaner Properly Installed

COOLING SYSTEM

- ☐ Check Cooling Fins for Damage or Obstruction
- ☐ Check Engine Shrouds for Obstruction

POWER TRAIN

- ☐ Brake & Clutch Adjusted Properly
- ☐ All Belts Adjusted Properly
- ☐ Safety Switches Adjusted Properly
- ☐ P.T.O. Clutch Adjusted Properly
- ☐ Hydrostat Adjusted Properly
- ☐ Unit Operated Properly in All Gears

GENERAL

- ☐ All Grease Fittings Lubricated
- ☐ Front Tire Pressure Set
- ☐ Rear Tire Pressure Set
- ☐ Tractor Operation Checked
- ☐ Appearance of Tractor Checked
- ☐ All Safety & Operational Decals in Place
- ☐ Operator's Manual with Tractor

DEALER'S DELIVERY GUIDE FOR 900 SERIES TRACTORS**EXPLAIN TO YOUR CUSTOMER THE CARE, SAFE OPERATION AND ADJUSTMENT OF ITEMS LISTED BELOW:****CONTROLS**

- ☐ ALL MODELS
- ☐ HYDROSTATIC MODELS

OPERATION

- ☐ STARTING ENGINE
- ☐ STOPPING ENGINE
- ☐ STARTING TRACTOR
- ☐ STOPPING TRACTOR
- ☐ OPERATING WITH IMPLEMENTS

☐ **OPERATOR'S SAFETY PRECAUTIONS**☐ **USER'S RESPONSIBILITY & WARRANTY****LUBRICATION AND SERVICE**

- ☐ ENGINE OIL
- ☐ ENGINE FUEL
- ☐ BEVEL GEAR HOUSINGS
- ☐ GREASE FITTINGS
- ☐ FRONT WHEEL BEARINGS
- ☐ AIR CLEANER
- ☐ ENGINE COOLING FINS
- ☐ BATTERY CARE
- ☐ HYDROSTATIC PUMP FLUID LEVEL & FILTER
- ☐ OFF SEASON STORAGE

ADJUSTMENTS

- ☐ SEAT
- ☐ FRONT P.T.O.
- ☐ CLUTCH & BRAKE
- ☐ MOWER
- ☐ OTHER ATTACHMENTS

TO OUR CUSTOMER

The following pages and illustrations are printed to help supply you with the knowledge to better operate and service your new **DEUTZ-ALLIS** equipment.

We are proud to have you as a customer and feel you will be proud to be an **DEUTZ-ALLIS** owner.

Any piece of equipment needs, and must have a certain amount of service and maintenance to keep it in top running condition. We have attempted to cover all the adjustments required to fit most conditions; however, there may be times when special care must be taken to fit a condition.

Study this operator's manual carefully and become acquainted with all the adjustments and operating procedures before attempting to operate your new equipment. Remember, it is a machine and has been designed and tested to do an efficient job in most operating conditions and will perform in relation to the service it receives.

If special attention is required for some conditions, ask your **DEUTZ-ALLIS** Dealer; his Parts and Service Organization will be glad to help and answer any questions on operation and service of your new machine.



**ATTENTION! BECOME ALERT!
YOUR SAFETY IS INVOLVED!**



This symbol is used to call your attention to safety precautions that should be followed by the operator to avoid accidents. When you see this symbol - Heed Its Warning.

USER'S RESPONSIBILITY

It is the responsibility of the user to read the Operator's Manual and understand the safe and correct operating procedures as pertains to the operation of the product, and to lubricate and maintain the product according to the maintenance schedule in the Operator's Manual.

The user is responsible for inspecting his machine, and for having parts repaired or replaced when continued use of the product would cause damage or excessive wear to other parts. It is the user's responsibility to deliver his machine to a Deutz-Allis dealer for service or replacement of defective parts which are covered by the standard warranty. When requesting warranty service, you must present your copy of delivery record.

The user will advise the Dealer when operation of the unit will be started so dealer representative can be on hand to make necessary adjustments and help you get started properly.

If the Dealer is requested by the Customer to travel to another location, or haul the machine to his shop for the purpose of performing a warranty obligation or free inspection, it would be for the Customer's convenience, and the cost for such trips is to be paid for by the Customer. Any arrangement whereby the Dealer agrees to absorb all or a part of the cost of these trips is to be made between the Dealer and the Customer and is to be considered a courtesy to the Customer.

Deutz-Allis does not allow credit for the cost of travel time, mileage, or hauling as a warranty allowance.

WARRANTY Your Deutz-Allis warranty for any new equipment listed appears on your copy of the Purchase Order signed by you and your selling dealer. You will be required to pay any premium for over-time labor requested by you, any charge for making service calls and for transporting the equipment to and from the place where warranty work is performed. Normal maintenance service and repair work not covered by the warranty during the warranty period and all service after the warranty period will be charged for at the dealer's regular rates and prices.

6/85

THE DEUTZ-ALLIS NEW EQUIPMENT BATTERY SERVICE ADJUSTMENT POLICY FOR LAWN AND GARDEN EQUIPMENT

LIMITED WARRANTY

1. If within a period of 90 DAYS after day of sale to the original user, a Deutz-Allis new equipment battery becomes unserviceable (not merely discharged) in normal use, due to defective material or workmanship, the Deutz-Allis Corporation will replace it with an equivalent new Deutz-Allis battery, without charge, to the original user.
2. If after the expiration of such 90 DAYS but before the expiration of 24 months from date of sale to the original user (each such month being designated herein as a unit of service) a Deutz-Allis new equipment battery becomes unserviceable (not merely discharged) in normal use, due to defective material or workmanship, it will be replaced for the original user, in exchange for the unserviceable battery, with an equivalent new Deutz-Allis battery at an adjusted price. This adjusted price shall be determined by applying to the then current retail price of the new battery, the percentage of the maximum (24) units of service which was received from the unserviceable battery.

LIMITATIONS

No-charge replacements or adjustments under this policy may be made by any authorized Deutz-Allis Lawn and Garden Equipment dealer.

This policy does not cover the following:

1. Unserviceability due to abuse or neglect, failure to maintain recommended electrolyte level, fire wreckage, explosion, freezing, the addition to the battery of any chemical or solution other than approved water or battery grade sulfuric acid of proper original equipment battery, or continued operation of the battery in an undercharged condition (below half charge - 1.190 sp. gr.).
2. Breakage of containers, covers or posts.
3. The cost of transportation, service calls, recharges or the use of rental batteries.

PROOF OF DATE OF PURCHASE IS REQUIRED FOR ALL CLAIMS. DEUTZ-ALLIS CORPORATION WILL HAVE NO OBLIGATIONS UNDER THIS POLICY IF THE DATE CODING ON THE BATTERY IS REMOVED OR DESTROYED. IN NO EVENT WILL DEUTZ-ALLIS CORPORATION BE LIABLE FOR CONSEQUENTIAL DAMAGES.

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TAKE TIME FOR SAFETY

BE A SAFE OPERATOR

AVOID ACCIDENTS BY

THINKING BEFORE ACTING

AND BY READING YOUR OPERATOR'S MANUAL

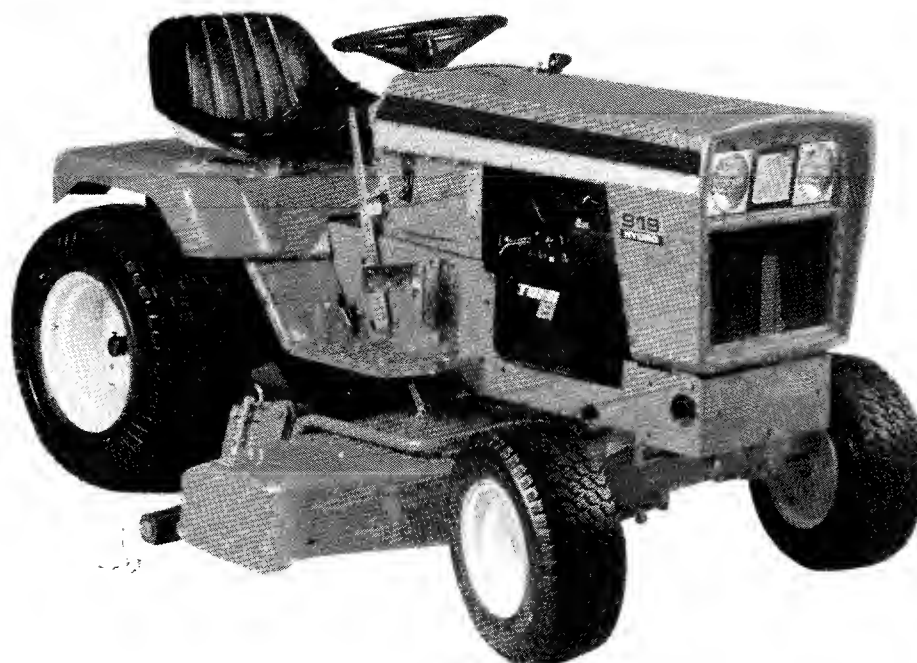
NOTE: Some illustrations in this manual show units with optional equipment installed. This optional equipment may be purchased from your local Deutz-Allis Dealer.

NOTE: Some photographs in this manual were taken of prototype models. Production models may vary in some detail.



CAUTION: Some photographs in this manual may show shields or cover panels removed for purposes of clarity. NEVER OPERATE Unit without all shields and cover panels in place.

NOTES



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CONTENTS

TO OUR DEALER	1	SERVICE TIPS	20
TO OUR CUSTOMER — USER'S RESPONSIBILITY	2	SERVICE	
BATTERY WARRANTY	3	Battery	22
CONTENTS	5	Drive Belt Replacement - Hydrostatic	23
SAFETY	6	Mower Belt Replacement	24
DECALS	7	ADJUSTMENTS	
SPECIFICATIONS	8	Seat	25
OPERATION		PTO Clutch Adjustments	25
Starting	9	Hydrostatic	25
Hydrostatic Controls	10	MOWER INSTALLATION & REMOVAL	27
Operation on Slopes	12	MOWER LEVELING PROCEDURE	28
NORMAL CARE		TRACTOR & MOWER IDENTIFICATION	30
Normal Care Schedule	13	WIRING DIAGRAM	31
Lubrication	14	ENGINE — K301, K321, K341	32
Fluid Levels & Tire Pressure	14	ENGINE — KT17, KT19	39
Battery & Cables	15		
Wheel Bearings	15		
Storage	17		
Starting After Storage	17		
Lubricate Mower Idler Pulley	18		
Clean, Shapen & Balance Blade	18		

SAFETY

SAFETY RULES



CAUTION: Read these safety rules and follow them closely. Failure to obey these rules could result in loss of control of vehicle with severe personal injury to yourself or bystanders. The triangle in text signifies important cautions or warnings which must be followed.

GENERAL

Read the Operator's Manual carefully. Be thoroughly familiar with the controls and the proper use of the equipment.

Never allow children to operate the machine. Do not allow adults to operate it without proper instruction.

Do not carry passengers.

Use only attachments or accessories designed for your machine. See your dealer for a complete list of recommended attachments or accessories.

Keep the area of operation clear of all persons, particularly small children, and pets.

Never direct discharge of material toward bystanders.

MAKE SURE:

- Tractor and attachments are in good operating conditions.
- All safety devices and shields are in place and in good working condition, and
- All adjustments are correct.

PREPARATION

Handle gasoline with care - it is highly flammable.

- Use approved gasoline container.
- Never remove the fuel tank cap or add gasoline to a running or hot engine, or fill the fuel tank indoors. Wipe up spilled gasoline.

Do not run the engine indoors. Exhaust fumes are deadly.

Clear the work area of objects which might be picked up and thrown by attachments.

Disengage all attachment clutches and shift into neutral before attempting to start the engine.

Wear heavy footwear. Do not operate tractor when barefoot or when wearing open sandals or canvas shoes.

OPERATION

Disengage power to attachments(s), stop tractor engine, shift into neutral, set parking brake, lower the attachment, and remove the key before leaving the operator's position for any reason, such as to unclog attachment chutes or to make repairs or adjustments.

Stop tractor and attachments and inspect for damage after striking a foreign object. Repair any damage before restarting and operating the equipment.

Watch out for traffic when crossing or operating near roadways.

Operate only in daylight or in good artificial light.

Never make any adjustment while the engine is running.

Operate only up and down the face of slopes; never across the face. Do not stop or start suddenly on slopes.

Avoid using brake to control downhill speed. Select low transmission and engine speed before starting downhill.

Reduce speed on slopes and in sharp turns to prevent tipping or loss of control. Use extreme caution when changing direction on slopes.

Be especially careful not to touch tractor or attachment parts which might be hot from operation. Allow such parts to cool before attempting to maintain, adjust, or service.

Stay alert for holes in the terrain and other hidden hazards. Be extra careful when operating on wet or slippery surfaces.

If equipment begins to vibrate abnormally, disengage power to attachments and stop engine at once. Inspect for damage and correct before starting up tractor.

Use care when pulling loads or using heavy equipment.

- Use only drawbar hitch point.
- Limit loads to those you can safely control.
- Do not turn sharply. Use care when backing.
- Use weights when recommended in the tractor or attachment Operator's Manual.

Disengage power to attachments when transporting or not in use.

MAINTENANCE & STORAGE

Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.

Do not change the engine governor settings or over-speed the engine.

To reduce fire hazard, keep the engine free of grass, leaves, and excess grease.

Never store the equipment with gasoline in the tank inside of building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.

ALL DANGER, WARNING AND CAUTION messages on your tractors and mower should be carefully read and obeyed. Personal bodily injury can result when these instructions are not followed. The information is for your safety and it is important. The safety messages on the following page are on your tractor and mower.

SAFETY AND OPERATIONAL DECALS



WARNING: These safety decals should be kept clean and in good condition to provide operator with constant reminders of safe operating procedures. If they become damaged or destroyed, replace them immediately. New decals can be obtained from your Deutz-Allis Lawn and Garden Equipment Dealer.

DANGER

1. Stand clear of discharge opening.
2. Do not operate mower without discharge deflector or entire grass collector system properly installed.

Location: L.H. End, Top of Mower Cover Plate

CAUTION

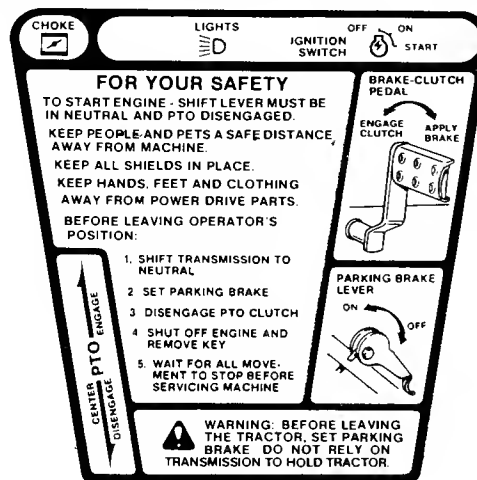
DISCONNECT GROUND (-) TERMINAL WHEN WORKING ON ELECTRICAL SYSTEM TO PREVENT SHORT CIRCUIT

Location: Top of Engine

DANGER

keep hands & feet from under mower

Location: R.H. End, Top of Mower Cover Plate



Location: Console on Hydrostatic Tractor

WARNING

TO AVOID INJURY DO NOT RUN ENGINE WITH SEAT DECK RAISED

Location: At Rear of Console Decal

SPECIFICATIONS

SPECIFICATIONS

ENGINE

For engine specifications see Engine Section.

Electrical

Starter: Electric Gear drive

Ignition: Battery ignition with breaker points

Electric System: 15 amp flywheel alternator, solid state rectifier - regulator, 12 Volt, 45 amp hour battery

CAPACITIES — ALL MODELS

Engine Crankcase Oil: See Engine Section

Engine Gear Box: Fill to end of dipstick with Deutz-Allis Power Fluid 821.

Final Drive Gear Case - Hydrostatic: 3 qts. (2.8 litres) of Deutz-Allis Power Fluid 821.

Fuel Tank: 3 gallons (11 litres)

STEERING — ALL MODELS

Type of Linkage: Bevel gear - Spindle lever type

Steering Gear Ratio: 4.66:1

GROUND DRIVE — HYDROSTATIC

Clutch: Foot operate V-belt clutch between bevel gear-box and transmission

Transmission: Air cooled, hydrostatic with variable displacement axial piston pump and with fixed displacement, reversible axial piston motor. Free wheeling valve for maneuvering of vehicle without starting engine.

Transmission Oil Filter - 12 HP, 14 HP, 16 HP, 17 HP & 19 HP Spin on cartridge type oil filter in charge pump suction line - 25 micron rating.

Final Drive: Hardened spur gears, rolling contact bearings.

Differential: Planetary spur gear, controlled traction.

GROUND SPEED — HYDROSTATIC

Forward: Variable, up to 7 mph (11 km/h) at 3600 rpm

Reverse: Variable, up to 4 mph (6.4 km/h) at 3600 rpm

DIMENSIONS — ALL MODELS

Height at Steering Wheel: 39.7" (1008 mm)

Height at Dashboard: 3.57 (907 mm)

Width: 36.9" (953 mm)

Length: 70" (1778 mm)

Front Wheel Tread: 30" (762 mm)

Rear Wheel Tread: 27" (686 mm)

Front Axle Clearance: 8" (203 mm)

Wheel Base: 50.7" (1270 mm)

Front Tires: 16 x 6.50 x 8

Rear Tires: - 12 HP, & 14 HP: 23 x 8.50 x 12

16 HP, 17 HP & 19 HP: 23 x 10.50 x 12

Turning Radius: Inside rear wheels - 32

Outside front wheels - 85

MOWER

Effective Cutting Width - 42": 42" (1067 mm)

48": 48" (1219 mm)

Overall Width w/Deflector - 42": 55" (1397 mm)

48": 61" (1549 mm)

Cutting Height: Adjustable from 1-5/8" to 3-1/8" (41 to 79 mm)

No. of blades: 3

Transport Clearance: 3" (76 mm), maximum (low cut)

The Deutz-Allis Corporation reserves the right to make changes in the above specifications or to add improvements at any time without notice or obligation.

CONTROLS

Refer to Figures 1, 2 or 3 to identify the controls for your tractor.

CHECKS BEFORE STARTING

1. Make sure you have proper wheel weights or counterweights if required. See the warnings on pages 12 and 13. Make sure any slopes are within required limits.
2. Check that crankcase is filled to full mark on dipstick. See the engine section for instructions and oil recommendations.
3. Make sure all nuts, bolts, screws and pins are in place and tight.



WARNING: Gasoline is highly flammable and must be handled with care. Never fill the tank when the engine is still hot from recent operation. Do not allow open flame, smoking or matches in the area. Avoid overfilling and wipe up any spills.

4. Make sure you can reach all controls from operator's position. If not, see Seat Adjustment.
5. Fill the gasoline tank with a good grade of clean, fresh, no-lead gasoline with pump sticker rating of 87 or higher octane. No-lead fuel leaves less combustion chamber deposits. Leaded gasoline may be used if no-lead is unavailable. DO NOT mix oil with gasoline.
6. For hydrostatic tractors, be sure free wheeling latch on hydrostatic pump is engaged. See "Moving Tractor Without Engine Power".

STARTING THE ENGINE

NOTE: Also see engine section for instructions.

1. Seat yourself in the operator's position. Make sure parking brake is set (pulled up and back against fender).
2. **On hydrostatic tractors**, place the hydrostatic control lever in neutral position and PTO clutch lever in disengaged position.
3. Depress clutch-brake pedal and apply braking pressure. Keep clutch disengaged until engine starts.
4. Pull choke out (unless engine is warm).
5. Set engine speed control to SLOW.
6. Turn ignition key to START. When engine starts, release key. If the engine does not start within 10 seconds, allow starter motor to cool for a minute before making a second attempt.
7. As engine warms up, push choke fully in. Allow engine to warm up for a few minutes before applying a load.

MOVING TRACTOR WITHOUT ENGINE POWER — HYDROSTATIC ONLY

Normally, the hydrostatic transmission will not allow the tractor to be pushed. To push the tractor, push the free wheeling latch (Figure 9) down. This will disengage the transmission. To engage the transmission pull the latch up. **Engage parking brake when tractor is parked.**

IMPORTANT: Towing the hydrostatic tractor will cause transmission damage. Do not use another vehicle to push or pull the tractor.

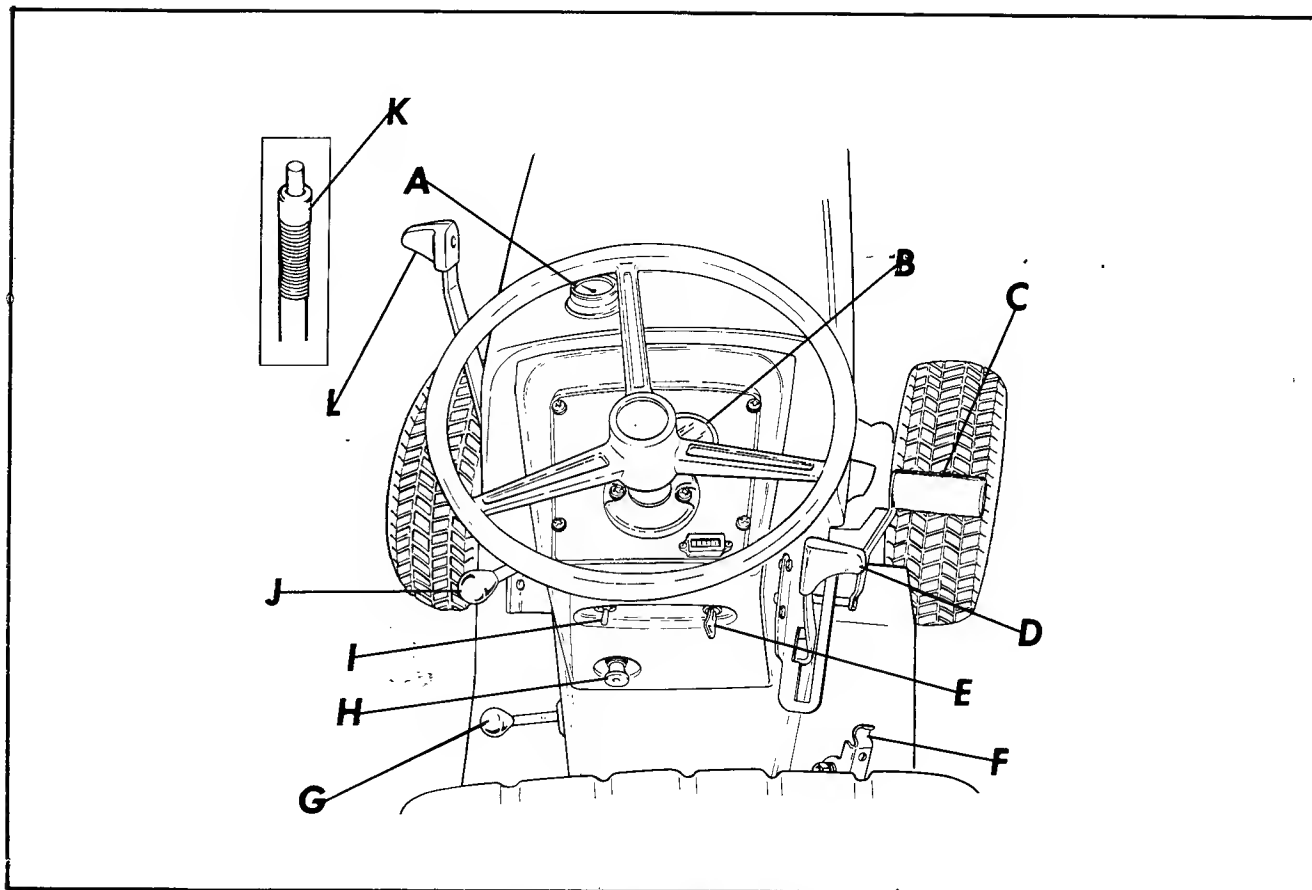


FIGURE 1 - Hydrostatic Controls

ITEM	NAME	FUNCTION
A	Gasoline Gauge	Shows gasoline level and serves as tank cap.
B	Ammeter	Shows when battery is being charged or discharged.
C	Clutch-Brake Pedal	Disengages clutch when depressed at least halfway. applies brake when depressed fully.
D	Hydrostatic Control Lever	Controls tractor speed and direction of travel (forward or reverse).
E	Ignition Switch	Operates with key to start, run or stop engine.
F	Parking Brake Lever	Locks brake to hold tractor in parked position.
G	PTO lever	Engages and disengages power to attachments.
H	Choke Knob	When pulled out, closes engine choke for cold weather starting.
I	Light Switch	Switches headlights on or off.
J	Engine Speed Control	Controls engine speed.
K	Manual Lift Lever (12 & 14 HP Only)	Lifts and holds attachments in transport position. Push lever forward to lower mower, pull lever back to raise mower.
L	Hydraulic Lift (All Models except 12 HP & 14 HP)	Lifts and holds attachments in transport position. With tractor engine running, push lever forward to lower mower, pull lever back to raise mower.

STARTING & STOPPING - HYDROSTATIC

1. With engine running, set engine speed control between 1/4 and 1/2.
2. Make sure path in desired direction of travel is clear. Release parking brake.
3. With the clutch engaged (pedal up) and the hydrostatic control lever in neutral, push control lever to the right to clear the neutral notch. Move lever slowly forward to move tractor forward or pull lever back to move tractor rearward.
4. Adjust engine speed control for desired engine speed. Adjust hydrostatic control lever to desired ground speed. See Table 1.
5. **To stop** tractor motion, move hydrostatic control lever to the neutral position notch. For a faster stop, depress the clutch-brake pedal fully.
6. **Before leaving tractor**, disengage PTO and stop tractor motion. Set engine speed control to SLOW. Set parking brake and lower attachment. Turn key to off and remove it.


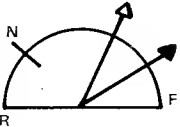

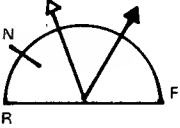
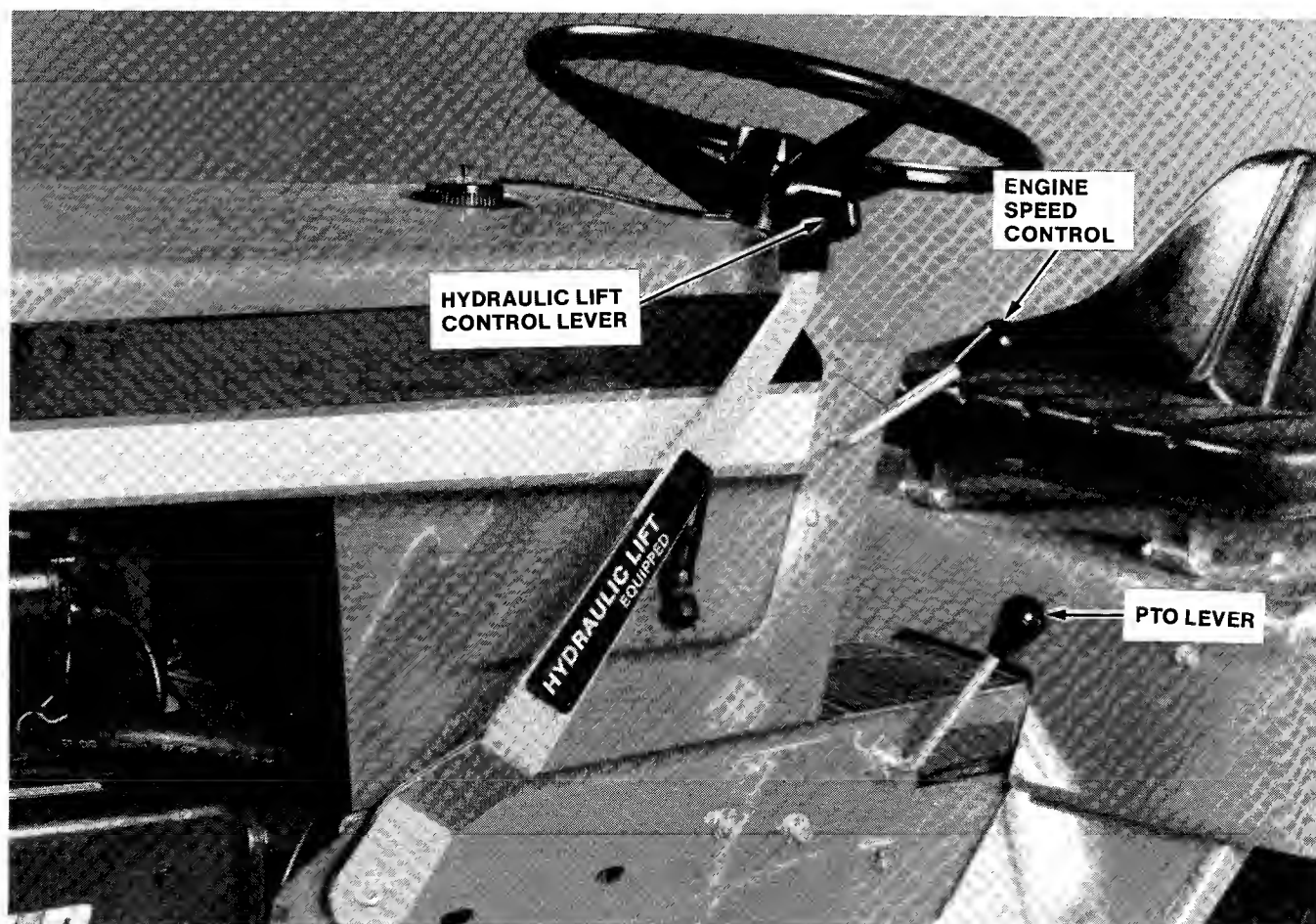
Attachment	Engine Speed Control	Hydrostatic Lever Position
Rotary Mower (Smooth terrain-normal grass)		
Rotary Mower (Rough terrain-normal grass)		

TABLE 1 - Hydrostatic Operation Chart

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FIGURE 3A - Hydraulic Lift Control Lever - Standard on Models - 916-H, 917-H, & 919-H

OPERATION ON SLOPES



WARNING: Never operate on slopes greater than 35 percent (19.3°) which is a rise of 3.5 feet (1067 mm) vertically in 10 feet (3.1 mm) horizontally. When operating on slopes that are greater than 20 percent (11.3°) use rear wheel weights (see your dealer). Select slow ground speed before driving onto slope. Do not use brakes to control speed. On semi-Automatic and 6 Speed models, do not attempt to shift gears while on slopes because once out of gear, it may not be possible to shift into another gear. Mow UP and DOWN the slope, never across the face, use caution when changing directions and **DO NOT START OR STOP SUDDENLY ON SLOPES.**

NORMAL CARE SCHEDULE

Refer to the engine section for normal care of engine. See Table 4 for a schedule of normal care for tractor and mower.



WARNING: To avoid serious injury, perform maintenance on the tractor only when the engine is stopped. Always remove the ignition key before beginning the maintenance to prevent accidental starting of the engine.

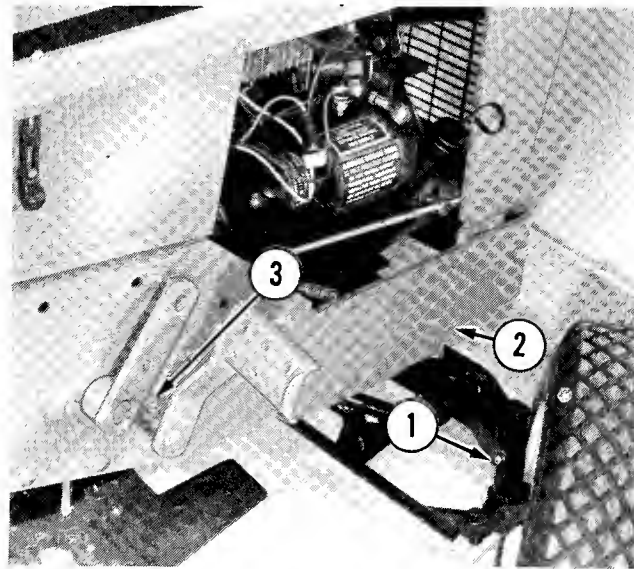
SCHEDULE				
Care Required	See Page	Every 5 Hours	Every 25 Hours	Every 100 Hours or Yearly
Check for loose hardware.	—	•		
Check battery and tires.	15		•	
Lubricate Tractor.	14		•	
Check bevel gear box fluid level.	14		•	
Clean trans. screen (hydro only).	16	•		
Clean battery & cables.	15		•	
Clean engine intake screen	35,42	•		
Repack front wheel bearings.	15			•
Lubricate mower idler pulley pivot.	18			•
Clean, sharpen & balance blades.	18			•
SEE ENGINE SECTION FOR ENGINE CARE				

TABLE 4 - Normal Care Schedule - Tractor & Mower

LUBRICATE TRACTOR

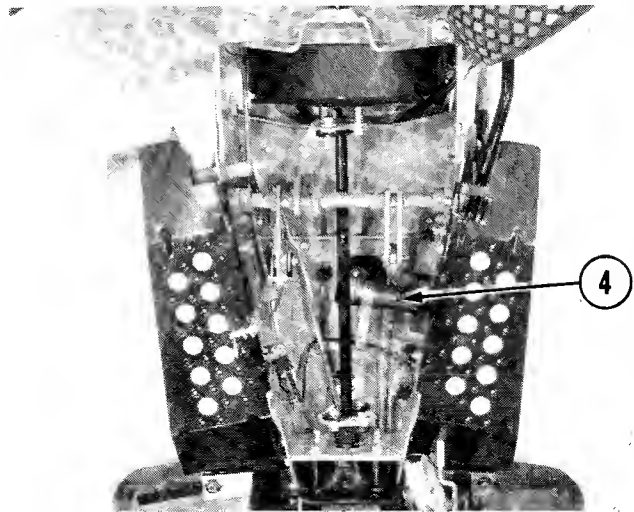
There are six grease fittings on the tractor. Wipe fittings clean before greasing. Use a standard grease gun with general purpose automotive grease.

1. One fitting on R.H. front axle spindle (Figure 4).
2. One fitting on L.H. front axle spindle (Figure 4, fitting not visible).
3. One fitting on clutch-brake pedal (Figure 4):
4. One fitting on steering gear under tractor (Figure 5):
5. & 6. Two fitting on the R.H. rear axle (Figure 6):



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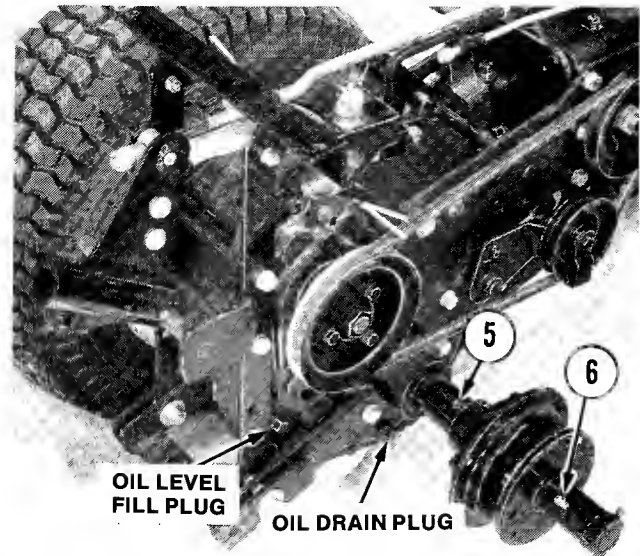
FIGURE 4 - Grease Fittings



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FIGURE 5 - Grease Fitting

A few drops of engine oil should be placed on the numerous pivot points and moving parts of the tractor and mower. Keep oil off belts and pulleys to prevent belt damage. Place oil at all points where metal parts rub together, such as rods and rod guides, levers, etc.

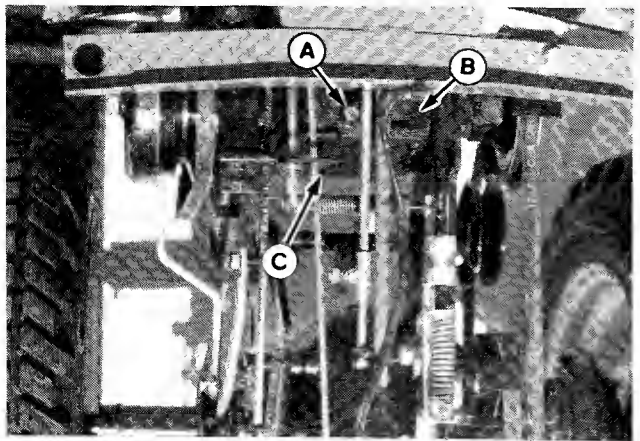


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FIGURE 6 - R.H. Drive Wheel Removed

CHECK BEVEL GEAR BOX FLUID LEVEL

Check the bevel gearbox fluid level. Remove the fill plug (A, Figure 7) and wipe oil off attached pin. Insert the fill plug loosely in hole (do not screw in). In this position the fluid should just touch the bottom of the pin. If not, add Allis-chalmers Power Fluid 821. Do not overfill. A drain plug (C) is located on rear cover.



T-58699

FIGURE 7 - Bevel Gear Box

- A. Oil Fill/Check Plug
- B. Bevel Gear Box
- C. Drain Plug

CHECK BATTERY AND TIRES

Check battery fluid level. The fluid should be even with the split ring full mark. If not, add distilled water. When removing the battery, always disconnect the negative (—) terminal first.

Check the air pressure of all four tires. Front tire pressure should be 14 PSI (97 kPa). Rear Tire pressure should be 7 PSI (48 kPa).

CLEAN BATTERY & CABLES

Disconnect negative cable first. Clean battery and cables with baking soda and water. Clean terminals and clamps with a wire brush and coat with grease or petroleum jelly. Connect negative cable last.

REPACK FRONT WHEEL BEARINGS

1. Block or jack up front of tractor for wheel removal.
2. Pry off grease cup with a screwdriver or a claw hammer (Figure 8).
3. Loosen collar setscrew using an allen wrench.
4. Remove collar, washer and outer bearing.

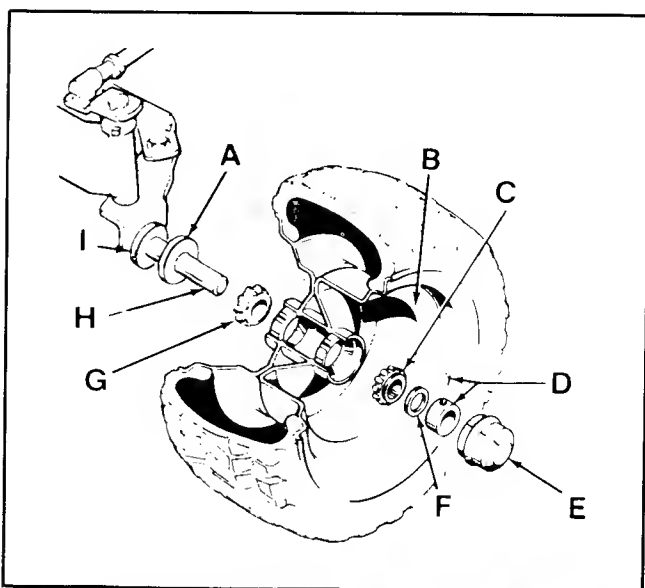
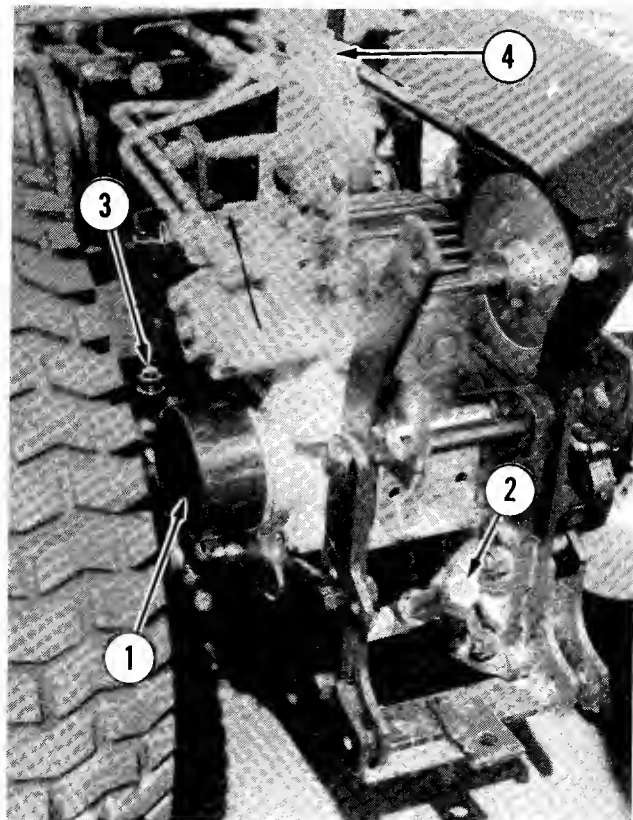


FIGURE 8 - Repack Front Wheel Bearings

- | | |
|----------------------|------------------|
| A. Seal | F. Washer |
| B. Wheel | G. Inner Bearing |
| C. Outer Bearing | H. Spindle |
| D. Collar & Setscrew | I. Spacer |
| E. Grease Cup | |

NOTE: Keep the two bearings separated. Each should be put back in its original place.

5. Remove wheel and inner bearing.
 6. Wash wheel shaft, bearings and internal part of wheel. Use a solvent and remove all old grease. Wipe dry.
 7. Inspect seal. If seal is damaged, replace it.
- NOTE:** Use only a prime quality wheel bearing grease. Keep grease clean and free of dirt.
8. Coat seal and spindle with grease.
 9. Lubricate bearings completely with grease. Use hand to force grease and fill spaces between bearing rollers.
 10. Install inner bearing
 11. Install outer bearing, washer and collar.
 12. Press collar towards tractor and spin wheel slowly to seat bearing.
 13. When wheel and bearings are seated and against seal, hold collar and tighten setscrew securely.
 14. Test seating by attempting to wobble wheel. If wobble is more than just evident, loosen setscrew and repeat steps 12, 13 and 14.
 15. Replace grease cup and wipe up any excess grease.
 16. Repeat entire procedure for other wheel.



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FIGURE 9 - Hydrostatic Transmission

- | | |
|-----------|--------------------------|
| 1. Filter | 3. Relief Valve/Breather |
| 2. Fill | 4. Free Wheeling Latch |

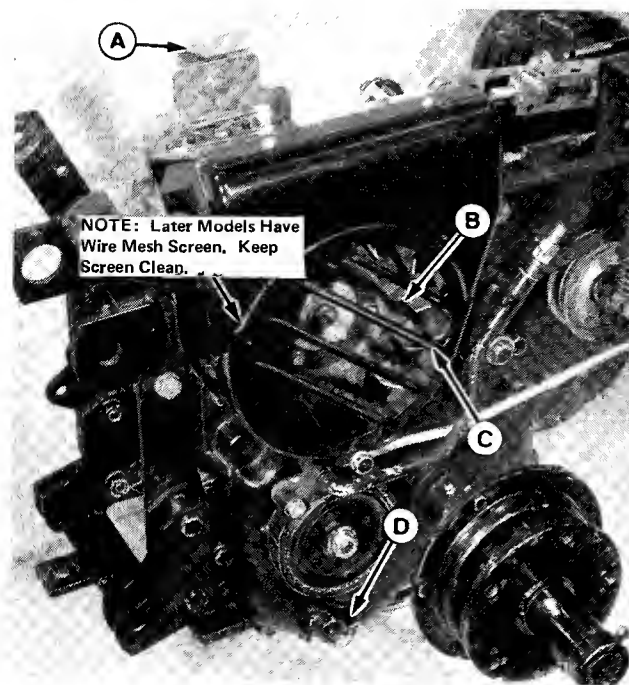
CHECK TRANSMISSION FLUID - HYDROSTATIC

1. The tractor must be on a level surface and the free wheeling latch (A, Figure 10) must be completely down.
2. Wipe the transmission fill cap and fill tube clean. Remove the cap.
3. Lift and hold the relief valve open.
4. Fluid should be at top of filler pipe, if not, add Deutz-Allis Power Fluid 821.

CHANGE TRANSMISSION FLUID & FILTER - HYDROSTATIC

NOTE: The filter is visible from left side of tractor (Figure 9). Replace the filter (Item 1) every 400 hours of operation or whenever changing transmission fluid. Transmission fluid should be changed only when performing repair work on transmission or hydrostatic unit or if it becomes discolored from overheating.

1. With hydrostatic transmission fluid hot, park tractor on level ground, place hydrostatic control lever in neutral, place any PTO clutch levers in the disengaged position, engage parking brake, and stop engine. Press free wheeling latch (Figure 10, Item A) firmly to disengage the hydrostatic pump.



T-58828

FIGURE 10 - Hydrostatic Transmission

- | |
|--|
| A. Free Wheel Latch |
| B. Cooling Fan |
| C. Cooling Fan Screen (Later Models Have Wire Mesh Screen Not Show Here) |
| D. Drain Plug |

2. Remove hydrostatic transmission drain plug (D, Figure 10) from lower R.H. side. Remove dirt from around the fill cap (Figure 9, Item 2) and loosen cap to permit air to enter transmission.
3. Clean dirt from the hydrostatic transmission filter and filter holder into which it is mounted and remove and discard filter.
4. When fluid has drained out of transmission, install new hydrostatic transmission filter in the following way:

Fill the filter with fluid. Coat gasket with transmission fluid, screw filter on until gasket contacts base, then tighten 1/2 to 3/4 turn more. Use no tools. Turn by hand only. Install and tighten drain plug securely.

5. Remove the fill (Figure 9, Item 2) and clean dirt away from the relief valve (3). Using a clean funnel, add Deutz-Allis Power Fluid 821 into the fill tube, while holding the relief valve up until fill tube will accept no more fluid. Replace the fill cap hand tight.

NOTE: Relief Valve (Figure 9, Item 3) must be held fully up for the entire time that fluid is being added.

6. Start engine and set it at idle speed, or slightly above.



CAUTION: Make sure that free wheeling latch is firmly down and that parking brake is fully engaged before starting the engine.

7. Let engine run at least five minutes, then stop engine and immediately lift relief valve and remove fill tube cap. While relief valve is up, pour more fluid into the transmission fill tube until level reaches the "run-over" point of the tube. Then install and tighten the fill tube cap. total fluid installed should be three quarts or more. Be extremely careful to keep all dust and dirt out of transmission while changing oil and filter. Check filter and drain plug for leaks.

STORAGE (TWO MONTHS OR MORE)

1. Prepare the mower for storage as follows:
 - a. Remove mower from tractor.
 - b. Clean underside of mower.
 - c. Coat all bare metal surfaces with paint or light coat of oil to prevent rusting.
 - d. Clean, sharpen and balance the blades.
2. Either add a gasoline stabilizer to the tank or drain the tank. Drain tank as follows:
 - a. Disconnect the fuel line from the carburetor or fuel pump. Drain fuel. Reconnect fuel line and put about 1/2 cup gasoline back into tank. Wipe up any spills.
 - b. Start engine and allow it to run until all gasoline is used up and engine stops.

Drain crankcase oil while engine is hot and refill with a grade of oil that will be required when tractor is used again.

3. Remove spark plug. Pour one ounce of 10W-30 oil into engine through spark plug hole. Crank engine a few times to distribute oil and then reinstall the spark plug.
4. Clean any dirt or grass from cylinder head cooling fins and engine housing and clean air cleaner element.
5. Cover air cleaner and exhaust outlet tightly with plastic or other water proof material to keep moisture, dirt and insects out of the engine.

6. Completely lubricate tractor as outlined in earlier part of this section.
7. Clean up tractor and apply paint or rust preventive to any areas where paint is chipped or damaged.
8. Be sure the battery is filled to the proper level with water and is fully charged. Battery life will be increased if it is removed and put in a cool, dry place and fully charged about once a month.
9. If the tractor is to be stored 6 months or longer block the tractor up off the wheels to relieve weight and keep the tires off a damp floor. Protect the tires from prolonged exposure to direct sunlight.
10. Store the tractor in a dry place indoors.

STARTING AFTER STORAGE

Before starting the tractor after it has been stored, do the following:

1. Remove the blocks from under the tractor.
2. Replace the battery.
3. Unplug the exhaust outlet.
4. Remove spark plug and wipe it dry. Crank the engine a few times to blow excess oil out of the plug hole. Reinstall plug.
5. Fill fuel tank with fresh 87 Octane, No-lead gasoline.
6. Check crankcase oil level, and add proper oil if necessary.
7. Inflate tires to proper operating pressure. Check fluid levels.
8. Start the engine and let it run slowly. DO NOT run at high speed immediately after starting. Be sure to run engine only out of doors or in well ventilated area.

LUBRICATE MOWER IDLER PULLEY PIVOT

1. Remove mower from tractor.
2. Remove cotter pins to fold back the adjusting rods (42" mower) or lift the bail assembly (48" mower).
3. Remove the tapite screws to remove the right hand cover (both covers can be removed to check-clean inside of mower deck). See Figure 12.
4. Apply a few drops of oil to idler pulley pivot. Be sure idler pivots freely.
5. Reinstall cover and tapite screws.
6. Reinstall adjusting rods or bail assembly and secure with cotter pins. Be sure to spread legs of cotter pins.

CLEAN, SHARPEN & BALANCE BLADES

1. Remove mower from tractor.
2. Check each of the three blades. Blades should be sharp and free of nicks and dents. If not, sharpen blades as described in remaining steps.



WARNING: For your personal safety do not handle the sharp mower blades with bare hands. Careless or improper handling of blades may result in serious injury.

3. To remove blade for sharpening, use wooden block to hold blade while removing its blade mounting capscrew (Figure 13).
4. Use a file to sharpen blade to fine edge. Remove all nicks and dents in blade edge. If blade is severely damaged, it should be replaced.
5. Balance the blade as shown in Figure 14. Center the blade's center hole on a nail lubricated with a drop of oil. A balanced blade will remain level.

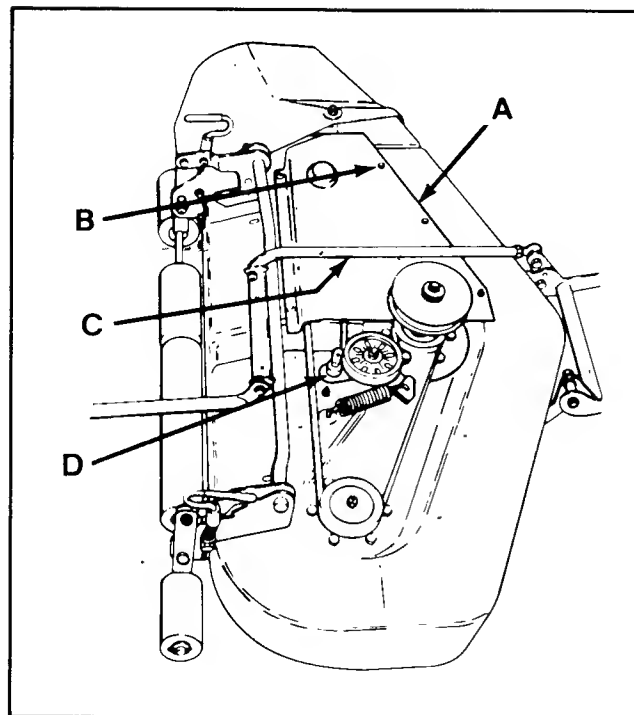


FIGURE 12 - Idler Pulley Pivot

- | | |
|------------|------------------------|
| A. Cover | C. Level Adjusting Rod |
| B. Tapites | D. Idler Pulley Pivot |

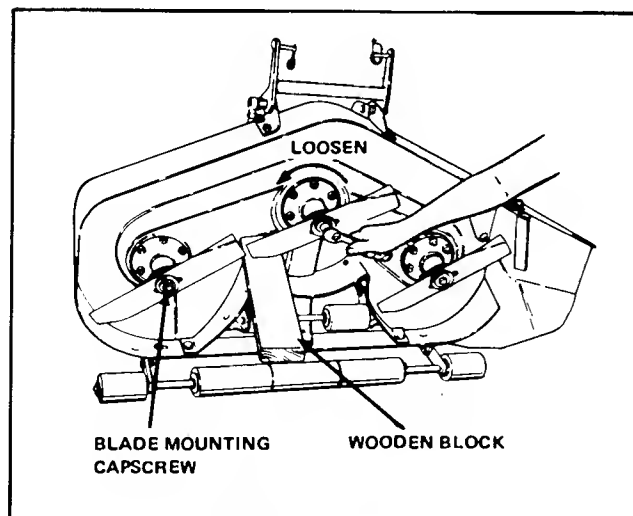


FIGURE 13 - Loosen Blade

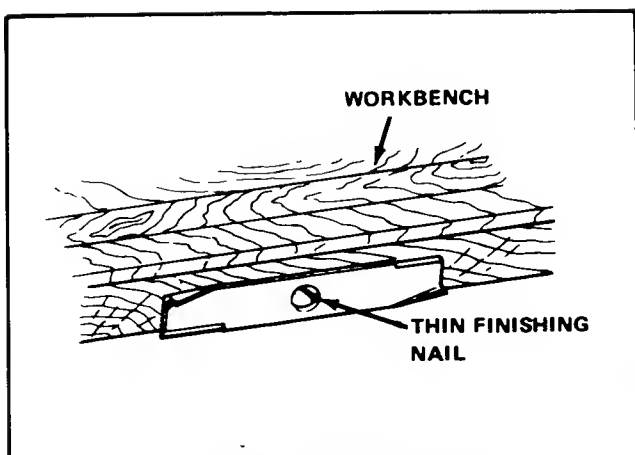


FIGURE 14 - Balance Blade



WARNING: For your personal safety, blade mounting capscrews must be installed with the cup washer and spline washer and then securely tightened. Torque blade mounting capscrews to 50 ft.-lbs. (68 N · m).

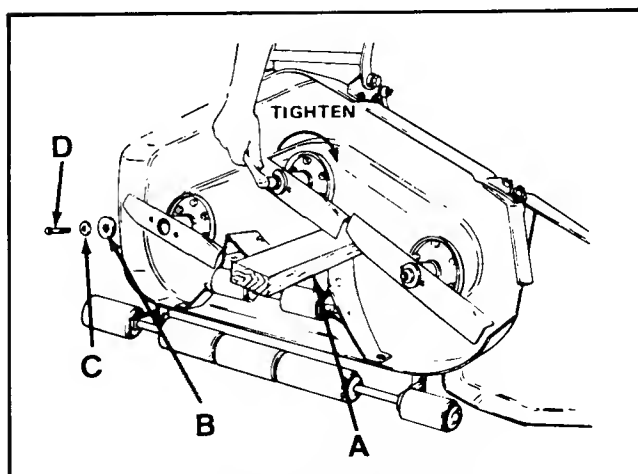
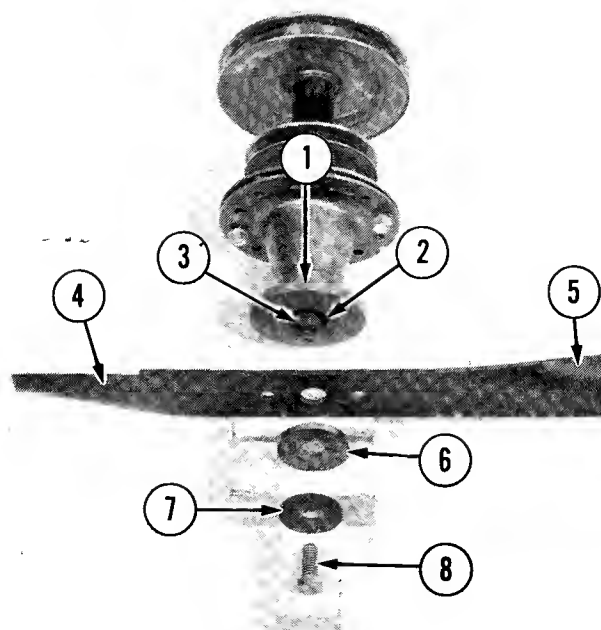


FIGURE 15 - Install Blade

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|------------------|---------------|
| A. Wooden Block | C. Cup Washer |
| B. Spline Washer | D. Capscrew |



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FIGURE 14A

- | | |
|----------------------|------------------|
| 1. Blade Adapter | 5. Lift Tab |
| 2. Self-Locking Ring | 6. Spline Washer |
| 3. Arbor Shaft | 7. Cup Washer |
| 4. Blade | 8. Capscrew |

- Carefully clean the blades and arbors, See Figure 14-A. Before installing the blade, be sure that the self-locking ring is pushed up tight against the blade adaptor. Install the new or sharpened blade with the lift tabs toward the top on the arbor shaft. Install the spline washer, making sure that it is engaged on the splines of the arbor shaft. Install the cup washer with the concave side toward the blade and tighten the capscrew securely. Use a block or wedge to keep the blade from turning while tightening the capscrew. (A-Figure 15).

NOTE: The mower blade retaining capscrews should be torqued to 50 ft.-lbs. (68 N · m).

Rotate the blades slowly by hand to see that they clear the housing all around and that the blade tips are running true.

SERVICE TIPS

For difficulties not covered in this manual contact your dealer.



WARNING: To avoid serious injury, perform maintenance on the tractor only when the engine is stopped. Always remove the ignition key before beginning the maintenance to prevent accidental starting of the engine.

- | | |
|---|---|
| 1. Engine does not crank. | <p>A. Shuttle or Six Speed - Gear shift lever not in neutral.
Hydrostatic - Transmission control lever not in neutral.</p> <p>B. PTO lever(s) not disengaged.</p> <p>C. Circuit breaker tripped. Wait one minute for automatic reset. If defective, see your dealer.</p> <p>D. Wiring loose or broken. Replace broken wires and tighten connections.</p> <p>E. Battery discharged or terminals corroded. Clean terminals or have battery charged.</p> <p>F. Faulty electrical system.</p> |
| 2. Engine cranks but does not start. | <p>A. Out of gasoline.</p> <p>B. Engine flooded. Push in choke and attempt to start.</p> <p>C. Crankcase oil too heavy. See Engine Section.</p> <p>D. Water in gasoline or gasoline is stale. Drain and fill with fresh gasoline.</p> <p>E. Faulty engine electrical or fuel system. See Engine Section or your dealer.</p> |
| 3. Engine hard to start or runs poorly. | <p>A. Fuel mixture too rich. Push in choke. Clean air filter.</p> <p>B. Carburetor adjusted incorrectly or engine needs tune up. See Engine Section or your dealer.</p> <p>C. Water in gasoline. Drain and fill with fresh gasoline.</p> |
| 4. Engine knocks. | <p>A. Oil level low. Add oil as required.</p> <p>B. Wrong grade of oil. See oil specifications.</p> <p>C. Wrong grade of gasoline. Use clean fresh, no lead gasoline.</p> |
| 5. Excessive oil consumption. | <p>A. Engine running too hot. Clean engine cooling fins and blower screen.</p> <p>B. Wrong weight of oil. See oil specifications.</p> <p>C. Too much oil in crankcase. Drain excess oil.</p> |
| 6. Exhaust black or smoky. | <p>A. Dirty air filter. Clean or replace.</p> <p>B. Choke not open. Push in choke and be sure choke plate opens.</p> <p>C. Carburetor adjustment wrong. See Engine section or your dealer.</p> |
| 7. Hydrostatic Tractor | <p>Tractor creeps forward or backward with hydrostatic control lever in neutral position. Perform hydrostatic neutral adjustment.</p> |

- | | |
|--|---|
| 8. Engine runs, but will not drive tractor or lacks power. | <p>A. Hydrostatic - Free wheeling latch down; push latch up. Hoses kinked; check and correct. Clutch idler pivot sticking; lubricate.</p> <p>B. Parking brake engaged.</p> <p>C. Transmission oil cold. Allow three minutes for warmup.</p> <p>D. Transmission fluid low. Add as required. Check for leaks.</p> <p>E. Drive belt slipping. See problem No. 10.</p> |
| 9. Drive belt slips | <p>A. Clutch free travel or belt tension out of adjustment. Adjust.</p> <p>B. Pulleys or belt greasy or oily. Clean.</p> <p>C. Clutch rod binding in guide; oil clutch rod.</p> <p>D. Belt stretched or worn. Replace belt.</p> |
| 10. Brake will not hold. | <p>A. Brake (foot pedal or parking) out of adjustment.</p> <p>B. Brake lining worn. Replace.</p> |
| 11. Tractor handles poorly. | <p>A. Steering linkage loose. Tighten any loosen connections.</p> <p>B. Improper tire inflation.</p> <p>C. Wheel spinning or slipping. Use weights.</p> <p>D. Driving too fast for land contours. Reduce speed.</p> <p>E. Steering requires lubrication.</p> |

SERVICE TIPS — MOWER

- | | |
|--------------------------------|---|
| 1. Mower will not raise | <p>A. Lift cable not attached or broken. Attach or replace as necessary.</p> <p>B. Lift lever or electric lift problem. See tractor manual or your dealer.</p> <p>C. Hydraulic lift system faulty. See your dealer.</p> |
| 2. Mower cut to uneven. | <p>A. Mower not leveled properly. Repeat leveling adjustment in mower installation procedures.</p> <p>B. Tractor tires not inflated equally or properly. See tractor manual for correct pressures.</p> <p>C. Missing pin on mower hitch. Install pin.</p> |
| 3. Mower cut is rough looking. | <p>A. Engine speed too slow. Use 3/4 to full throttle.</p> <p>B. Tractor ground speed too fast. Use low gear or slower tractor ground speed.</p> <p>C. Blades dull and require sharpening.</p> <p>D. Mower drive belt oily or worn. Clean or replace belt as necessary.</p> <p>E. Mower idler pulley pivot sticking. Check/lubricate as necessary. (See Normal Care).</p> <p>F. Mower internal drive belt worn or broken.</p> |

- | | |
|---|---|
| 4. Engine stalls easily with mower engaged. | A. Tractor ground speed too fast. Use slower tractor ground speed.
B. Engine speed too slow. Use 3/4 to full throttle.
C. Cutting height set too low when mowing tall grass. Cut tall grass at maximum cutting height during first pass.
D. Discharge chute jamming with cut grass. Mow grass with discharge pointing toward previously cut area or wait for drier conditions. |
| 5. Excessive mower vibration. | A. Blade mounting capscrews are loose: Torque capscrews to 50 ft.-lbs. (68 N · m).
B. Mower blades are bent. Replace.
C. Mower blades are out of balance. Remove sharpen, and balance blades (Page 18). |
| 6. Excessive belt breakage occurs. | A. Loose or rough pulleys. File off rough edges or replace as necessary.
B. Incorrect belt. Use belt designed for your mower.
C. Damaged mower pulley. See your dealer.
D. Mower not leveled properly.
E. Operating mower with lift lever in raised position. Operate mower only with lift lever in lowered position. |

BATTERY REPLACEMENT

A dead battery or one too weak to start the engine may not mean the battery needs to be replaced. It may, as an example, mean that the alternator is not charging the battery properly. If there is any doubt about the cause of the problem, see your dealer.



WARNING: Batteries contain sulphuric acid, avoid contact with skin, eyes or clothing. Batteries produce explosive hydrogen gas when being charged. Ventilate area when charging battery. Keep cigarettes, open flame and sparks away from battery at all times. Keep batteries and acid out of the reach of children. When removing the battery, ALWAYS remove the ground cable from the negative (-) terminal first. When replacing the battery ALWAYS connect and tighten the positive (+) terminal first, then connect the ground cable to the negative (-) terminal.

If the battery is too weak to start the engine, it is recommended that it be removed from the tractor, properly checked and recharged, and replaced in tractor by following the above procedure for removing and connecting the battery cables.

JUMP START WITH AUXILIARY (BOOSTER) BATTERY

Since the jump starting process increases the release of explosive hydrogen gas and at the same time increases the possibility of electrical sparks when jumper cables are attached and removed, JUMP STARTING IS NOT RECOMMENDED.

If for some reason starting MUST be done, follow the procedure exactly as outlines below for least danger from sparks.

1. Set parking brake and place transmission in "NEUTRAL". Turn off lights and other electrical loads.
2. If booster battery is in another vehicle, DO NOT permit vehicles to touch each other, as this could establish an undesirable ground connection.
3. Remove vent caps from both the booster and the discharged batteries. Lay a cloth over the open vent wells of each battery. These two actions help reduce the explosion hazard always present in either battery when connecting a "live" battery to a "dead" battery.

4. Attach one end of one jumper cable to the positive terminal of the booster battery (identified by a red color, "+" or "P" on the battery case, post or clamp) and the other end of same cable to positive terminal of discharged battery. Make sure that each clamp on this cable makes a secure tight electrical connection with the positive terminal to which it is attached. To prevent sparking, never move either of these clamps while the negative jumper cable is connected.
5. Attach one end of the remaining cable to the negative terminal (black color, "-" or "N") of the booster battery, and the other end to a bare metal surface on the frame of your tractor AWAY FROM the battery compartment (do not connect directly to negative post of dead battery). Take care that clamps from one cable do not inadvertently touch the clamps on the other cable. Do not lean over the battery when making this connection.
6. The tractor with the dead battery should now start. If tractor engine turns over but does not start within 10 seconds, release the start key and allow starter motor to cool for 60 seconds before making a second attempt. Do not attempt to crank the engine more than 10 seconds at a time. Always allow a starter cool down period of 60 seconds after each cranking period of 10 seconds.

If engine does not start after four 10 second attempts check Service Tips in engine section and find and correct the problem.

7. When removing the jumper cables, disconnect the cable clamps in this exact order ONLY.

First, the clamp attached to the tractor frame.

Second, the clamp attached to the booster battery negative terminal.

Third, the clamp attached to the tractor battery positive terminal.

Fourth, the clamp attached to the booster battery positive terminal.

When cables are removed, reinstall the vent caps to both batteries and safely dispose of the two cloths which may have corrosive battery acid on them.



WARNING: Any procedure other than the above could result in personal injury caused by electrolyte squirting out the battery vents, or due to battery explosion.

Do not attempt to jump start a vehicle having a frozen battery because the battery may rupture or explode. If a frozen battery is suspected, examine all fill vents on the battery. If ice can be seen or if the electrolyte fluid cannot be seen do not attempt to start with jumper cables as long as the battery remains frozen.

DRIVE BELT REPLACEMENT — HYDROSTATIC

1. Tie the clutch-brake pedal down in the disengaged position.
2. Raise the tractor seat deck.
3. Remove the capscrew (C, figure 17) and remove the belt guard assembly (B).
4. Remove the two capscrews (D) and the thread forming screw (E) to remove the fan guard assembly.
5. Remove the old belt and install the new one. Make sure the belt is in all pulley grooves and is not twisted.
6. Reinstall the fan guard with the capscrews (D) and the thread forming screw (E).

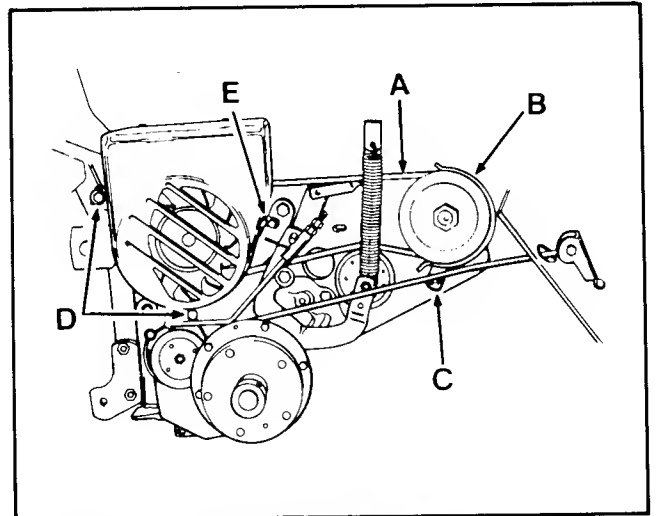


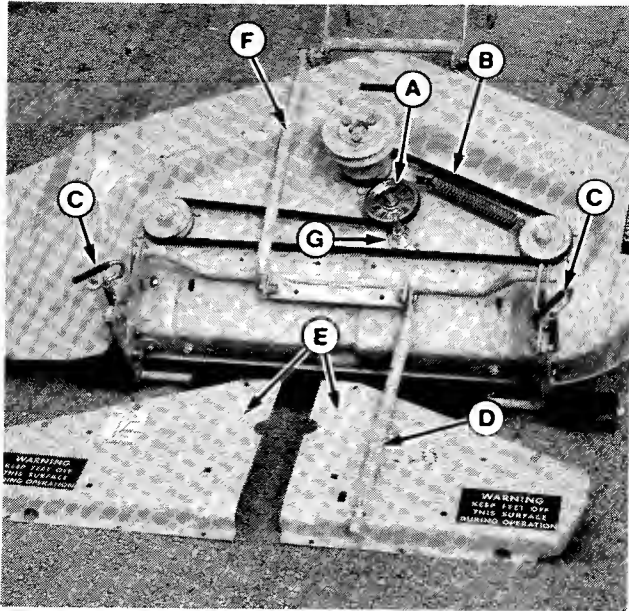
FIGURE 17 - Drive Belt Replacement - Hydrostatic

- | | |
|---------------|-------------------------|
| A. Belt | D. Fan Guard Capscrews |
| B. Belt Guard | E. Thread Forming Screw |
| C. Capscrew | |

7. Release the clutch-brake pedal and check to be sure belt is still seated in all pulleys.
8. Reinstall the belt guard (B) so the bracket on the back side almost touches the pulley hub. Hold the guard in place and tighten the capscrew (B).
9. Check and adjust the tractor clutch according to the instructions in the Adjustment Section.
10. Lower and latch the seat deck when finished.

MOWER BELT REPLACEMENT

1. Remove mower from tractor.
2. Remove the bolts that secure the left and right belt covers to the deck. Remove the pin that holds the lift cable clevis to the lift anchor (G, Figure 19) of the mower.



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FIGURE 19 - Mower Drive Belt

- | | |
|---------------------------|-----------------------|
| A. Idler Pulley | E. Belt Covers |
| B. Mower Belt | F. Leveling Bar, L.H. |
| C. Height Adjusting Lever | G. Lift Anchor |
| D. Leveling Bar, R.H. | |
3. **On the 42" mower**, remove the right hand leveling bar (D) to permit lifting the right hand belt cover over the lift anchor. Remove both covers.
 4. **On the 48" mower**, remove the left hand belt cover first, then spring the inner edge of the right hand belt cover up over the lift anchor (G) and slide it out from under the right hand leveling bar.
 5. Unhook the idler spring from the idler (A) and remove belt from arbor pulleys. Install the new belt on the arbors and reattach idler spring.
 6. Reinstall the arbor belt covers and hookup the leveling bars.

ADJUSTMENTS



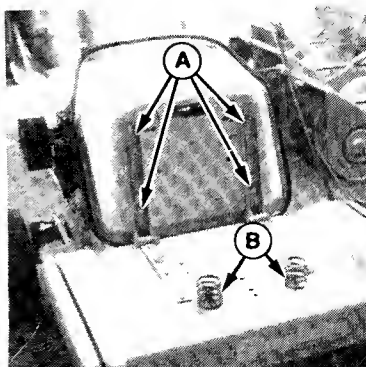
WARNING: NEVER permit anyone to examine, clean, service or adjust the tractor or any equipment operated by it UNTIL the tractor engine is stopped, the start key is removed from the switch, the parking brake is set, the transmission, or drive control is in neutral, all PTO or attachment drives are disengaged and all moving parts have stopped.

RAISING THE SEAT DECK — ALL MODELS

Reach under the seat deck and locate the locking levers (one on each side). Press upward at the tips of both levers and raise the seat deck.

SEAT ADJUSTMENT — ALL MODELS

1. Lift up the seat as shown in Figure 20.
2. Loosen the four nuts under the seat and slide the seat forward or back. Tighten the nuts firmly.
3. The springs can be moved to different holes in the deck for maximum riding comfort. A lighter person will want to move the springs more forward. To remove spring, pull off the retainer under the deck.



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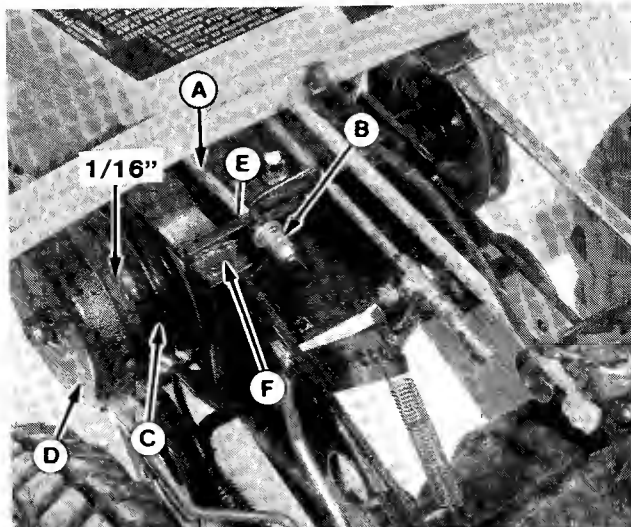
FIGURE 20 - Seat Adjustment

A. Nuts B. Springs

PTO CLUTCH ADJUSTMENT - ALL MODELS

The PTO clutch is properly adjusted when the clutch pulley (C, Figure 21) moves away from clutch cone (D) 1/16" (1.5 mm) movement when clutch is disengaged.

1. Loosen the rear nut (B).
2. Turn the front nut slightly clockwise to increase pulley travel or counterclockwise to decrease pulley travel.
3. Tighten the rear nut against the front nut and repeat the check.



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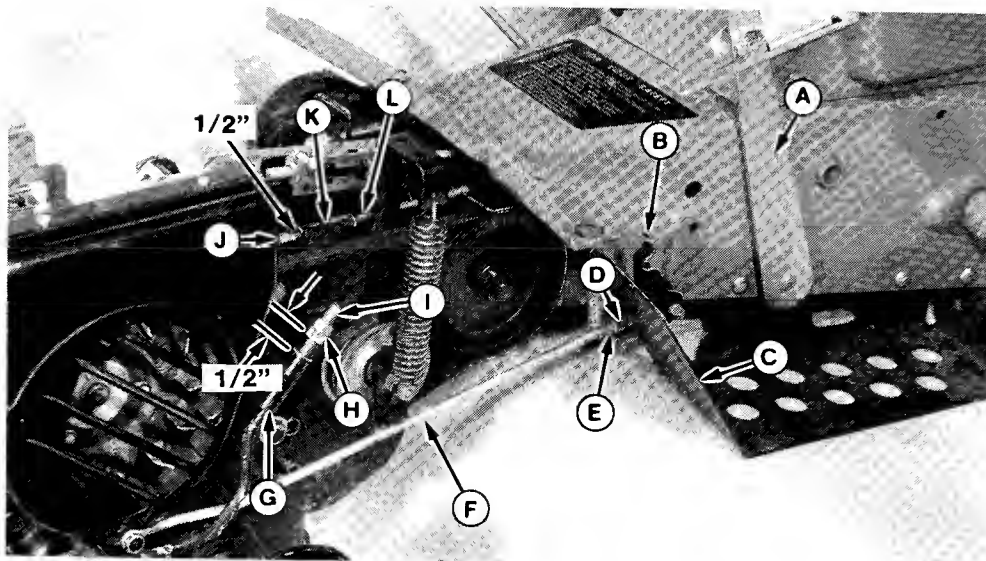
FIGURE 21 - PTO Clutch Adjustment - All Models

A. PTO Clutch Rod	D. Clutch Cone
B. Jam Nuts	E. Locknut
C. Clutch Pulley	F. Pivot Arm

4. Adjust locknut (E) so there is 1/8" (3 mm) between locknut (E) and pivot arm (F) when clutch is engaged.

ADJUSTMENTS - HYDROSTATIC

1. **To adjust parking brake**, loosen the jam nut (E, Figure 22) at parking brake rod end. Rotate the parking brake handle (B) clockwise until it is tight and pulled up against fender as shown. Operate the brake handle to see if it is too tight or too loose. It should be tight against fender when set but not too tight to operate. When proper adjustment is made, tighten the jam nut.
2. **To adjust the foot brake**, engage the parking brake. Adjust jam nuts (H) on end of foot brake rod to provide 1/2" (12.7 mm) spring length between washers. Depress the pedal to engage brake. The drive belt should be slack and free of idler pulley. If not, check clutch adjustment (step 3). Test operate the tractor. If brake doesn't stop the tractor, see your dealer.
3. **To adjust tractor clutch**, adjust jam nuts (J) on clutch rod so there is 1/2" (12.7 mm) spring length between washers with clutch-brake pedal in up position.
4. **Hydrostatic Neutral Adjustment.** If the tractor creeps forward or back when the hydrostatic control lever is in neutral adjust as follows.



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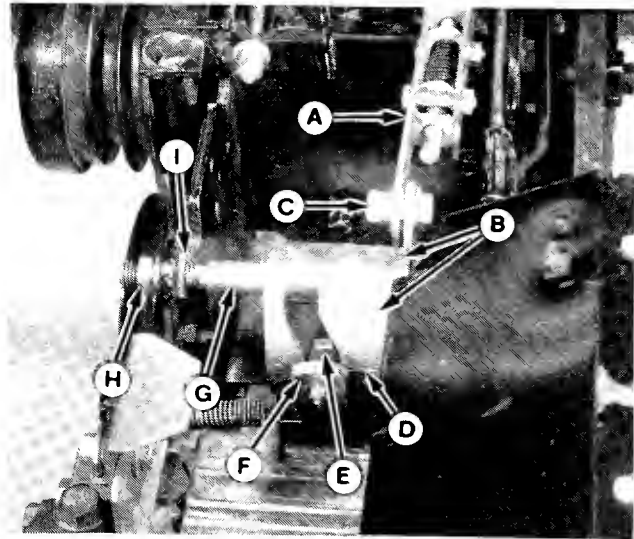
FIGURE 22 - Brake & Clutch Adjustments - Hydrostatic

- | | | | |
|----|---------------------------|----|----------------------|
| A. | Hydrostatic Control Lever | G. | Foot Brake Rod Guide |
| B. | Parking Brake Handle | H. | Jam Nuts |
| C. | Fender | I. | Foot Brake Rod |
| D. | Parking Brake Rod End | J. | Jam Nuts |
| E. | Jam Nut | K. | Clutch Rod Guide |
| F. | Parking Brake Rod | L. | Clutch Rod |



WARNING: Always stop engine before leaving operator's position. Do not perform adjustment with engine running.

- Park tractor on level ground, make sure hydrostatic control lever is firmly seated in the neutral notch of quadrant, stop engine and set parking brake.
- Raise the seat deck and check if the pump control arm roller (E, Figure 23) is exactly centered with the centering mark (D). If not, loosen bolt (C) and move the control cam (B) until centering mark (D) is centered on roller (E). Tighten the bolt (C).
- Lower the seat deck, get in operator's seat, start engine and release parking brake. If tractor still creeps with hydrostatic control lever in neutral, note which direction it creeps and proceed with next step.
- Stop the engine, set parking brake, and raise seat deck. Loosen the jam nut (H) on end of cam pivot shaft (G). If tractor creep had been in reverse turn adjusting nut (I) 1/8 to 1/4 turn counterclockwise. Lock jam nut, lower seat deck, get in operator's seat, start engine, and release parking brake. If tractor still creeps, repeat step "d" turning nut (I) a little at a time until no creep occurs.




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FIGURE 23 - Hydrostatic Neutral Adjustment


- | | |
|----|-------------------------|
| A. | Control Strap |
| B. | Control Cam Assembly |
| C. | Bolt |
| D. | Centering Mark |
| E. | Pump Control Arm Roller |
| F. | Pump Control Arm |
| G. | Cam Pivot Shaft |
| H. | Jam Nut |
| I. | Adjusting Nut |

MOWER INSTALLATION

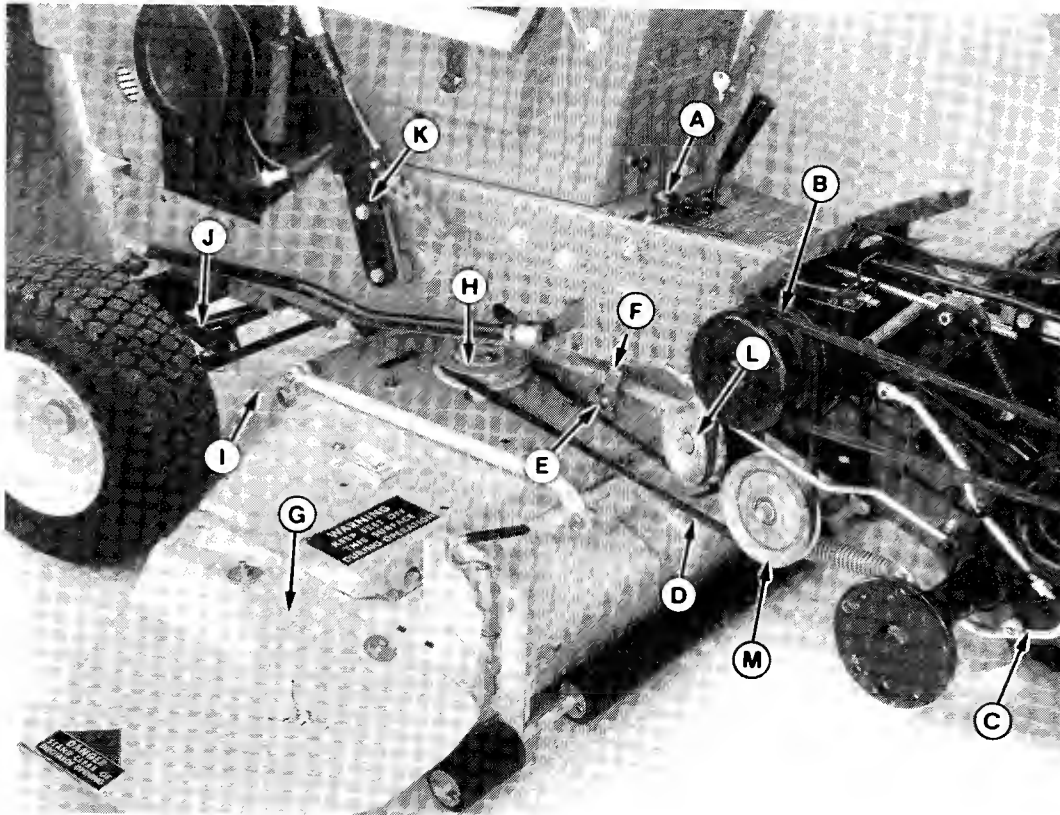
To prepare for installation, place the mower on a flat, hard working surface such as a concrete or blacktop drive. Park your tractor to the right of the mower, and position the tractor front wheels for a sharp right hand turn. Using the manual tractor lift lever, the optional electric lift switch, or the hydraulic lift control lever with the engine running, actuate the lift mechanism until it is at the fully lowered position. Then proceed as follows:

1.  **WARNING:** For your personal safety, stop tractor engine, remove key, shift into neutral, set parking brake, disengage Power Take-Off (PTO) and wait for all moving parts to stop.
2. Reach up under the center of the tractor, grasp the lift cable clevis (F - Figure 37) and pull it fully down to take the slack out of lift cable.
3. Make sure that front idler pulley (L, Figure 37) is in the top hole in its mounting bracket.
4. Slide the mower under the tractor.
5. Use the lift cable pin and spring clip to attach the tractor lift cable clevis to the mower lift anchor. (E, Figure 37).
6. With standard lift, pull lift lever (K - Figure 37) back and lock mower in fully raised position, or;

with electric lift actuate lift switch to fully raise mower, then turn ignition switch off and remove key, or;

with hydraulic lift, start engine, actuate lift lever and raise mower fully, then stop engine and remove start key.
7. Lift the front of the mower and attach the mower hitch to the tractor front hitch using the pins and safety clips provided with the mower. The pins are installed from the outside, and it is usually easier to install the left hand side pin first.
8. Lower the mower fully.
9.  **WARNING:** For your personal safety, be sure to remove tractor ignition key after using it to operate the optional electric lift, or to run the engine to operate the hydraulic lift. Accidental starting is possible if the key is left in the ignition switch.

10. Push the belt tensioning lever (C, Figure 37) fully down and forward.
 11. Raise the tractor seat to gain access to the PTO pulley.
 12. Install the mower drive belt on the mower pulley and the tractor pulleys. The belt must be seated in the inner groove of the PTO pulley. Make sure that flat side of the belt contacts the front idler pulley (L) and that idler pulley (L) is in upper hole of bracket for mower operation.
 13. Pull the belt tensioning lever (C, Figure 37) fully back and up to put tension on the mower drive belt.
 14. Notice that the rear idler pulley (M) is mounted in a slot. The pulley can be moved forward or back to increase or decrease belt tension. For initial setting proceed as follows. With the pulley tensioning lever pulled fully back and up measure the clearance between the front idler bracket and the stop. See diagram in Figure 37A. The clearance should be approximately 1-1/8" to 7/8" (28 to 22 mm). If not, push the belt tensioning lever down. Change position of the rear idler pulley in the slot. Recheck the measurement with belt tensioning lever pulled back and up.
- NOTE:** Front idler bracket should operate in green range of decal on stop when properly adjusted.
15. Lower the tractor seat.
 16. Operate the tractor with mower engaged for about 15 minutes. Then stop the engine, remove the start key, shift into neutral, set the parking brake and disengage the PTO. Recheck the position of the front idler bracket and, if necessary, check the position of the rear idler pulley (M).
- NOTE:** Check the belt adjustment periodically during the mowing season. Readjust rear idler (M) as required to keep front idler bracket operating in the green zone.
17. Lower the tractor seat.
 18. Level the mower according to the Mower Leveling procedure that follows.



T-61150

FIGURE 37 - Mower Installation

- | | | |
|--------------------------|------------------------|------------------------|
| A. PTO Clutch Lever | E. Lift Anchor | J. Tractor Front Hitch |
| B. Tractor Drive Pulley | F. Lift Cable Clevis | K. Lift Lever |
| C. Belt Tensioning Lever | G. Deflector | L. Front Idler Pulley |
| D. Drive Belt | H. Mower Driven Pulley | M. Rear Idler Pulley |
| I. Rocker Arm | | |

MOWER LEVELING PROCEDURE

This adjustment is normally required only when installing the mower for the first time or when reinstalling the mower after repairs were made to the tractor or mower hitches which might have affected the level. To level the mower, proceed as follows:

1. Check tractor tire pressures. The front tires should have equal pressure and the rear tires should have equal pressure. Then, with the tractor on a smooth level surface fully lower the mower to the ground, stop tractor engine, remove start key, shift transmission or drive control into neutral, set parking brake and disengage the mower PTO.
2. Turn both mower height adjustment handles (A, Figure 38) fully clockwise to the highest cutting height position.



WARNING: For your personal safety, do not handle the sharp mower blades with bare hands. Careless or improper handling of blades may result in serious injury.

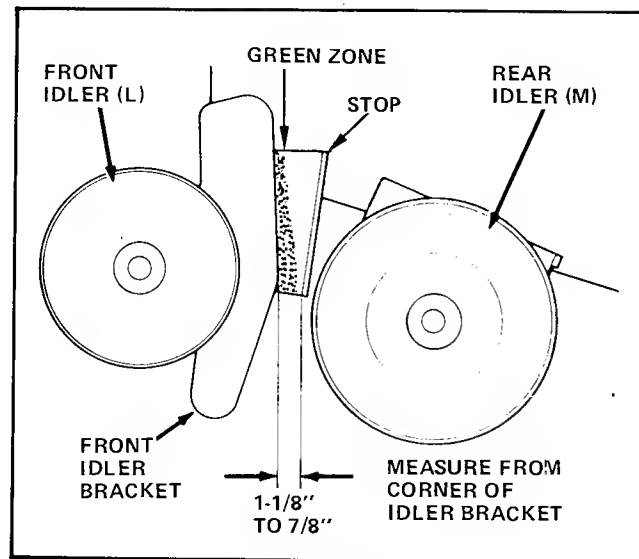


FIGURE 37A

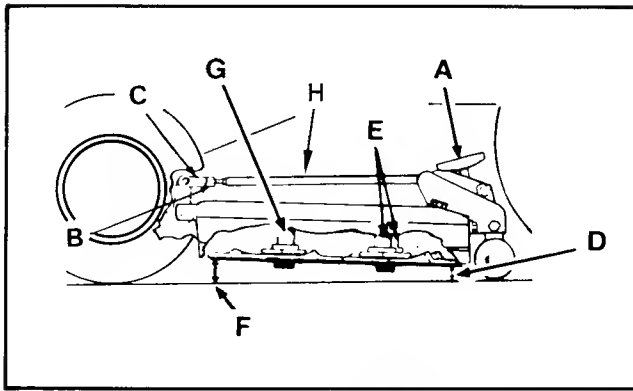


FIGURE 38 - Level Mower

- A. Height Adjustment Handle
- B. Jam Nut
- C. Yoke or Eyebolt
- D. Height of Side Blades
- E. Side Blades
- F. Height of Center Blade
- G. Center Blade
- H. Bail Assembly Arms

3. Rotate the mower blades so the tips point straight forward and backward as shown in Figure 38.
4. Measure and note the distance (F) from the front tip of the center blade to the ground.
5. Measure the distance (D) from the rear tips of the two side blades to the ground. This distance should be the same for the R.H. and L.H. side blades and should be 1/8" to 1/4" (3 to 6 mm) less than the front distance (F) measured in step 4.

NOTE: If the (F) and (D) distances measured meet both of these requirements, the mower is level and needs no adjustment. If the measurements are incorrect, the mower bail assembly eyebolts (42" mower) or yokes (48" mower) must be adjusted according to step 6. Both eyebolts or yokes must be adjusted to level the mower front to back. If only slight side-to-side leveling of the two side blades is required the eyebolt or yoke of only one side need be adjusted.



WARNING: To avoid possible injury when performing step 6, block up the front of the mower before removing the eyebolts or yokes so the mower will not drop down.

6. Level the mower according to the following.
 - a. Loosen the jam nuts (B, Figure 38).
 - b. If the rear distance (D) dimensions measured are different for the R.H. and L.H. side blades remove the cotter pin and disconnect the eye-

bolt or yoke from the mower hitch for only one bail assembly arm (H, Figure 38). Adjust this eyebolt or yoke in or out on the bail assembly arm until distance (D) is the same on the R.H. and L.H. side when this eyebolt or yoke is again connected to the mower hitch, and blocks added to step 6 are removed.

- c. Recheck the (F) distance. If the (D) distance is not in the range of 1/8" to 1/4" (3 to 6 mm) less than the (F) distance remove the cotter pin and disconnect the eyebolt or yoke from the other bail assembly arm. Then turn both eyebolts or yokes to change the length of both bail arm assemblies equally. Shorten the bail assembly arms to decrease the front height of the mower. Lengthen to raise the front height. Be sure to give both eyebolts or yokes and equal number of turns for front to back leveling.
- d. Reinstall the eyebolts or yokes on the hitch (the cotter pins need not be reinstalled yet) to check the blade tip measurements. Continue the adjustment and check until the center blade front tip is 1/8 to 1/4 (3 to 6 mm) higher than the side blade rear tips.
- e. Reinstall the eyebolts or yokes on the hitch and reinstall the cotter pins. Spread the cotter pins around the hitch pins. Then retighten the jam nuts. (B).

MOWER REMOVAL

1. Park the tractor on a flat, hard surface where there is room to remove the mower at the left side of the tractor and fully lower the mower.



WARNING: For your personal safety, stop tractor engine, remove key, shift into neutral, set parking brake, and disengage the mower PTO before removing the mower.

2. Push the belt tensioning lever (C, Figure 37) fully down and forward to release mower belt tension.
3. Raise the tractor seat deck and remove the mower drive belt from the mower and tractor pulleys (see Figure 37). Close the tractor seat deck.
4. Use the tractor lift lever or electric or hydraulic lift to raise the mower, stop engine, remove start key.
5. Remove the safety clips and pins to detach the mower hitch from the tractor hitch. Remove the right hand side pin first. Reinstall the pins and safety clips in the mower hitch for storage.
6. Lower the mower fully.

TRACTOR & MOWER IDENTIFICATION

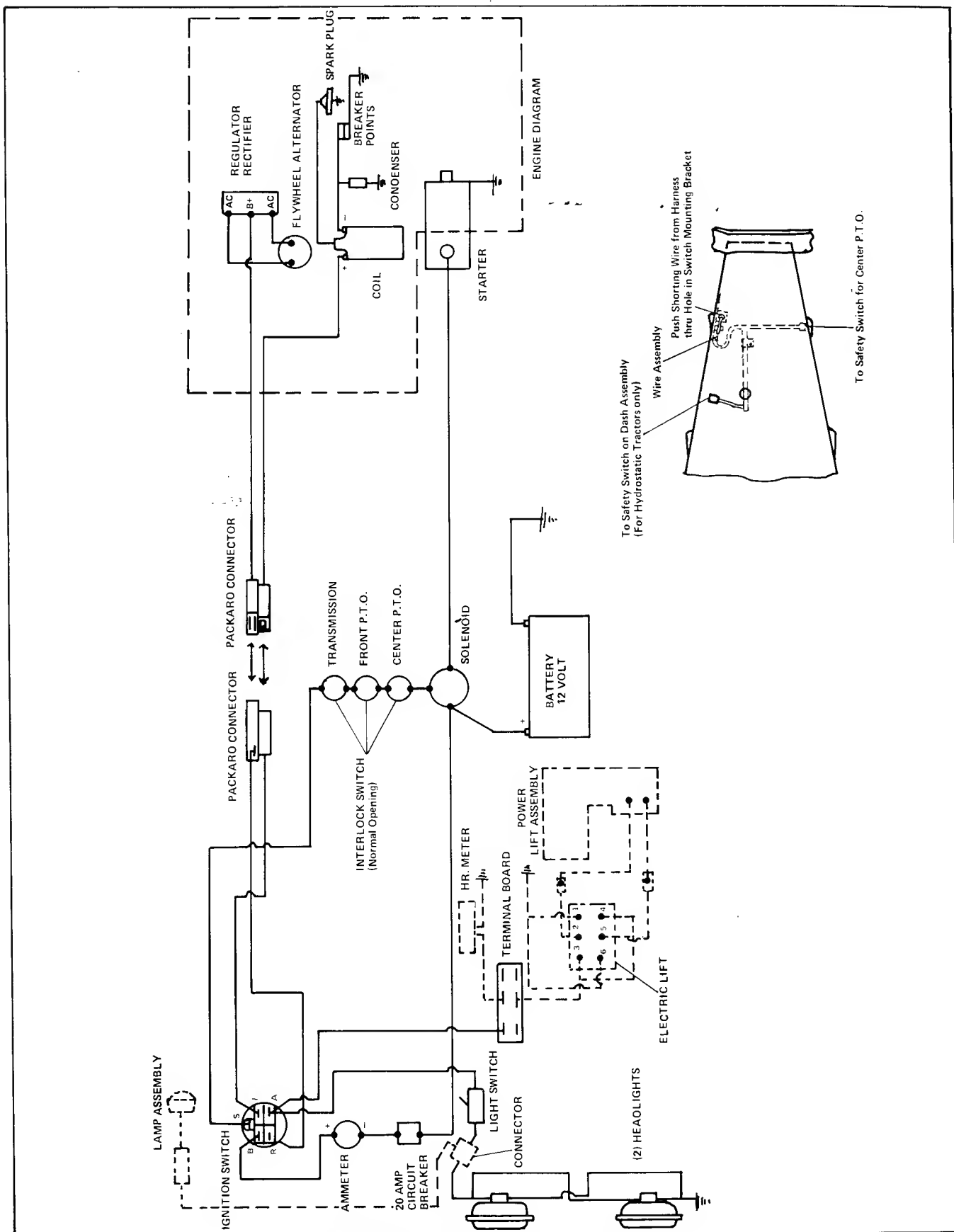
7. Remove the spring clip and pin to detach the lift cable from the mower. Reinstall the pin and spring clip in the lift cable for storage.
8. Turn tractor wheels for a sharp right hand turn, and slide the mower out the left side of the tractor.
9. Pull the belt tensioning lever fully back and up out of the way to prevent damaging it when using the tractor without the mower.

TRACTOR & MOWER IDENTIFICATION

When ordering parts, be prepared to give the identification number of the tractor and mower. The I.D. plate for the mower is located on the mower deck. The I.D. plate for the tractor is located on the right hand side of the frame. We suggest that you locate the numbers and record them here for easy reference.

Mower I.D. No. _____

Tractor I.D. No. _____



WIRING DIAGRAM FOR ALL UNITS

ENGINE INSTRUCTIONS FOR SINGLE CYLINDER MODELS K301, K321, and K341

SAFETY PRECAUTIONS



WARNING: Gasoline is extremely flammable and its vapors can explode if ignited. Store gasoline only in approved containers, in unoccupied buildings, away from spark or flames. Do not add gasoline while engine is running or start engine around spilled fuel. Never use gasoline in a cleaning agent.



WARNING: All engine exhaust contains poisonous carbon monoxide. Avoid inhaling exhaust fumes and never run the engine in a closed building or confined area.



WARNING: The engine and the exhaust system get extremely hot. DO NOT TOUCH. Never operate equipment with shrouds or safety guards removed. Keep hands, feet, clothing and hair away from moving parts.



WARNING: Never tamper with the governor setting - overspeed is hazardous. Do not allow equipment to run unattended.



WARNING: Batteries contain sulphuric acid - avoid contact with skin, eyes or clothing. Batteries produce explosive hydrogen gas when being charged. Ventilate area when charging battery. Keep cigarettes, open flame and sparks away from battery at all times. Keep batteries and acid out of the reach of children.

Never leave ignition switch "On" when charging battery - a switch left "On" with the battery connected can cause the ignition coil to overheat and possibly explode. When removing the battery from equipment always disconnect the negative cable first. When replacing battery connect the negative cable last.



WARNING: Before working on engine or equipment always remove the spark plug lead to prevent engine from starting accidentally.

OPERATING INSTRUCTIONS

PRE-START CHECK LIST

Fill fuel tank to "Full" level, do not overfill. Leave some room for fuel to expand.

With tractor parked on level surface check engine oil level. Add oil to bring level up to, but not over, the "F" mark on dipstick.

Make sure air cleaner wing nut is finger tight.

Clean off air intake screen and cooling fins.

Make sure safety guards are in place.

Make sure that tractor transmission is in neutral and that PTO clutch is disengaged.

STARTING

For the exact starting procedure, refer to Starting The Engine in the front part of this manual, then observe the following precautions.

Do not attempt to crank the engine continuously more than 10 seconds at a time.

Always allow the starter motor a cool-down period between cranking attempts, if the engine does not start. A 60-second cool-down period is required after each 10-second cranking period. Failure to follow these guidelines may result in burn-out of the starter motor.

NOTE: In the event of "false start", that is, if the engine gets up sufficient speed to disengage the starter, but fails to continue running, the engine must be allowed to come to a complete halt before a restart attempt is made. If the flywheel is still rotating when the starter is engaged, the pinion and ring gears may clash.

If starter motor will not turn over the engine, shut off starter motor immediately and make no further attempt to start engine until the condition is corrected.

Starter motors are prelubricated and brushes normally require attention only after extended use. If starter fails to kick in, check for physical damage.

If battery charge is not sufficient to turn starter motor over, refer to Battery Replacement on page 22.

STOPPING

Turn ignition switch OFF and wait until engine comes to a complete stop before attempting to clean, adjust or lubricate.

GENERAL ENGINE SPECIFICATIONS			
MODEL	K301	K321	K341
Horsepower (Approximate at 3600 RPM)	12 (8.95 kW)	14 (10.44 kW)	16 (11.94 kW)
Displacement - Cubic Inches	29.07 (476.4 cc)	31.27 (512.4 cc)	35.89 (588.2 cc)
Bore	3.38" (85.7 mm)	3.5" (88.9 mm)	3.75" (95.3 mm)
Stroke	3.25" (82.6 mm)	3.25" (82.6 mm)	3.25" (82.6 mm)
Weight - Approximate Pounds	118 lbs. (53.5 kg)	118 lbs. (53.5 kg)	122 lbs. (55.3 kg)
Oil Refill Capacity (U.S. Quart)	2 (1.9 litres)	2 (1.9 litres)	2 (1.9 litres)
Spark Plug Size (mm)	14 mm	14 mm	14 mm
Spark Plug Gap - (Champion H-10 or equivalent)	.035" (.89 mm)	.035" (.89 mm)	.035" (.89 mm)
Spark Plug Torque (Ft.-Lbs.)	22 (29.8 N · m)	22 (29.8 N · m)	22 (29.8 N · m)
Breaker Point Gap	.020" (.51 mm)	.020" (.51 mm)	.020" (.51 mm)

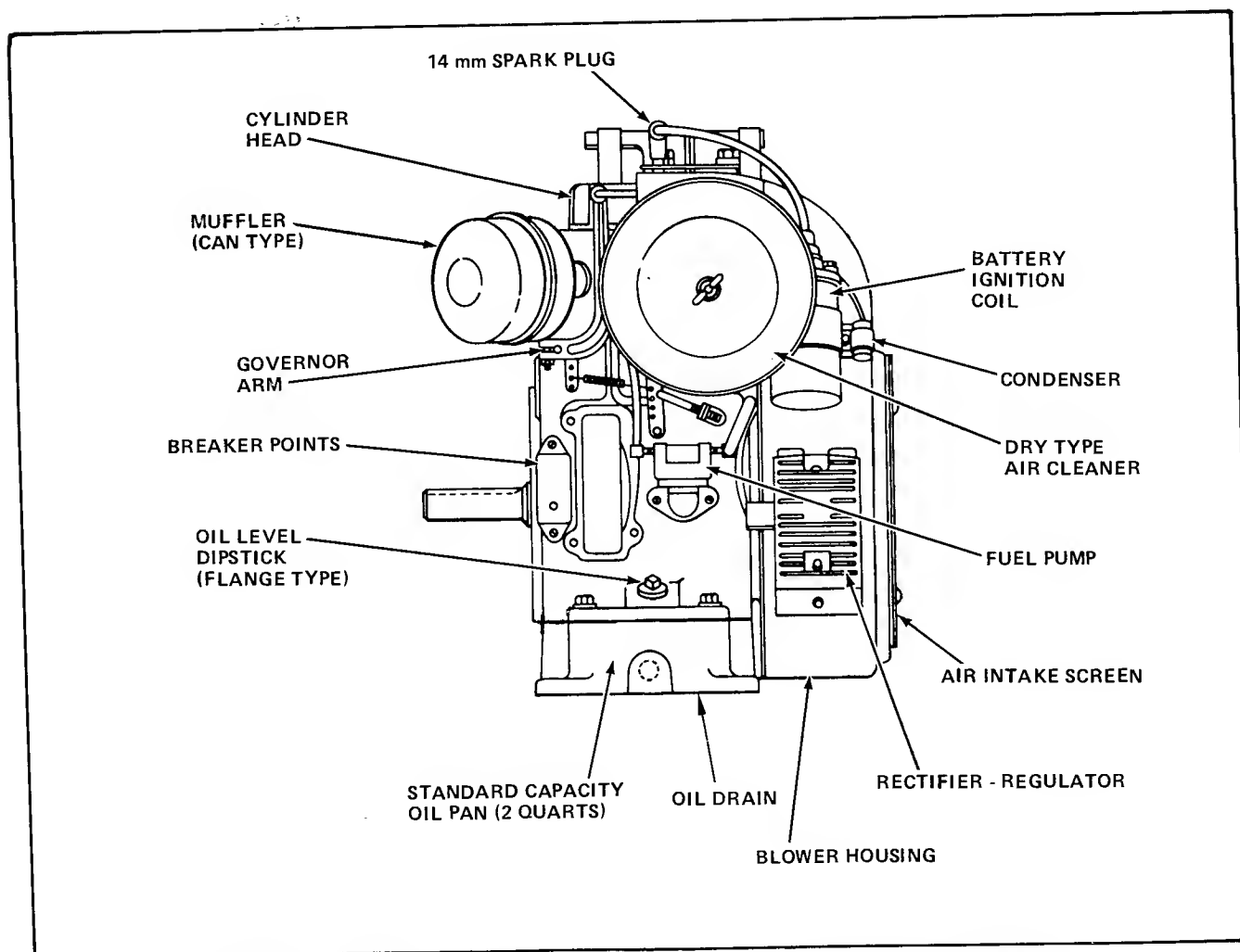


FIGURE 1 - General Location of Components on a Typical Single Cylinder Model

SERVICE

FUEL

Use Clean, fresh, no-lead gasoline with pump sticker octane rating of 87 or higher in the U.S.A. In Canada and other countries using the research method it should be 90 octane minimum.

No-lead fuel leaves less combustion chamber deposits. Leaded gasoline may be used if no-lead is unavailable.

Do not add oil to the gasoline. Purchase gasoline in small quantities. Fresh gasoline lessens chance of gum deposits forming and clogging the fuel system and ensures a fuel blended for the season. DO NOT use gasoline left over from the previous season.

LUBRICATION

The importance of checking and changing oil cannot be overemphasized. Dirty oil causes premature engine wear and failure.

Check oil before each use and add oil if necessary to bring oil level up to, but not over, the "F" mark on the dipstick.

Wipe dipstick and oil fill areas clean before checking, to keep dirt from falling into engine. Oil should always be checked while engine is level.

OIL CHANGE

On a new engine, change oil after the first 5 hours of operation and then every 25 operating hours thereafter. Change oil more frequently under dirty, dusty condition.

Drain oil when engine is warm - it flows more freely, carrying away more impurities. After draining oil reinstall drain plug. Remove oil fill plug and add the proper viscosity of oil for the temperature in which your engine will be operating.

First, add one quart then check oil level and add more oil as required to bring level up to "F" mark. (Oil capacity is approximately 2 quarts, or (1.9 litres). Do not overfill.

OIL TYPE

Use high quality detergent type oil with service designation SC, SD, SE or SF. Oil viscosity is selected according to the anticipated temperature in the area of engine operation as shown below.

Temperature	Recommended Viscosity
Above 32° F (0° C)	SAE—30
Below 32° F (0° C)	SAE 5W—20 SAE 5W—30

Use straight weight oils as specified. **DO NOT** use multi-viscosity oils above 32° F (0° C) as considerable increases in oil consumption and combustion deposits will result.

AIR CLEANER

A clean air filter is important - only a short period of operation with unfiltered air can ruin an engine.

This engine is equipped with a dry type air cleaner element, which should be checked every 50 operating hours and replaced if dirty. It should be checked and replaced more often under extremely dirty dusty conditions. Do not wash element in any liquid or attempt to blow dirt off with air hose as this will puncture filter element. When replacing element, use only genuine element. Carefully handle new element - do not use if gasket surfaces are bent or twisted.

NOTE: Wing nut must be finger tightened 1/2 to 1 full turn after nut contacts cover. **Do not overtighten.**

Each time element is inspected or replaced, inspect wing nut gasket. If gasket is worn, cut, or missing, replace with correct new wing nut. The wing nut gasket must be in good condition to prevent dust leaks.

Also inspect threads on stud. If threads are damaged or bad in anyway, replace base assembly.

PRECLEANER SERVICE PROCEDURE

If the air cleaner is equipped with a precleaner, the precleaner should be removed, cleaned and re-oiled every 25 operating hours, or more often under extremely dusty or dirty conditions. Follow this procedure to service precleaners.

1. Remove precleaner from air filter element.

SERVICE

2. Wash precleaner in water using a detergent.
3. Rinse thoroughly until all traces of detergent are eliminated.
4. Squeeze away excess water and air dry. (Do not wring precleaner).
5. Soak in fresh, clean engine oil and squeeze to remove excess oil.
6. Reinstall precleaner over air filter element.

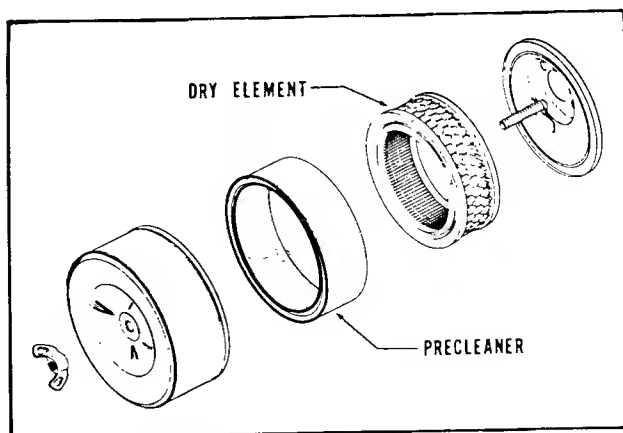


FIGURE 2 - Dry Type Air Cleaner with Serviceable PreCleaner

COOLING SYSTEM

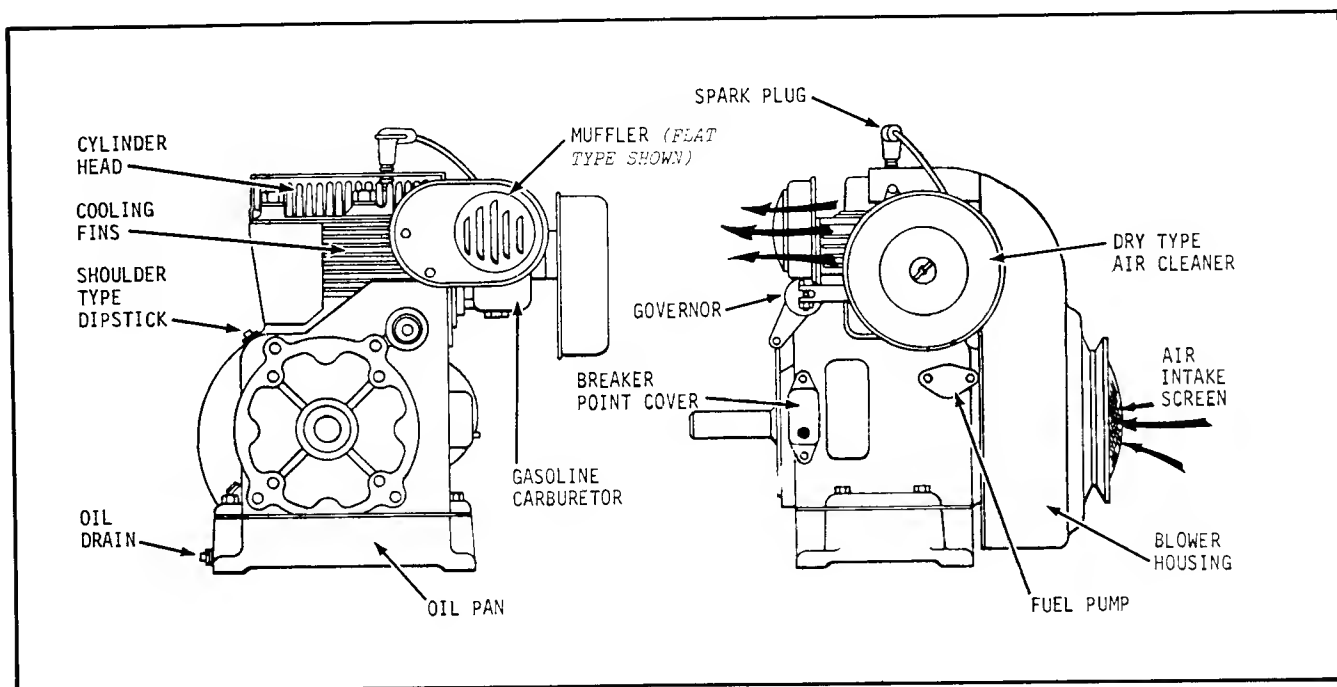
Before each startup make sure the air intake screen is clean and unobstructed. An obstructed screen can cause overheating of engine. If debris builds up on the screen while operating, stop the engine and brush off.

Every 50 operating hours remove shrouds (blower housing) and clean fins. Do not operate engine with cooling shrouds removed - this will cause overheating and engine damage. Clean external surfaces of your engine occasionally as deposits of dust and oil can contribute to improper cooling.

SPARK PLUGS

Incorrect spark plug, cracked porcelain, or improper spark gap can cause the engine to misfire. Clean area around plug before removing to prevent dirt from getting into engine. Carefully note spark plug appearance. It can indicate ignition trouble. If heavy black or blistered white deposits are noted, see your Deutz-Allis Dealer for correction.

Every 100 hours remove plug, check condition and reset gap or replace plug - see General Specifications. A worn plug should be replaced. Torque plugs to 18 - 22 ft.-lbs. (24 - 30 N · m).



SERVICE

CARBURETOR

Carburetors are adjusted in the factory and should not have to be reset. If black exhaust smoke is noted, check the air cleaner first - an apparent "overrich" mixture is often caused by a poorly serviced, clogged air cleaner element, not an improperly adjusted carburetor. If, however, one of the following conditions listed in the table below is noted, adjust the carburetor immediately as incorrect setting can lead to fouled spark plugs, over-heating, excessive valve wear or other problems.

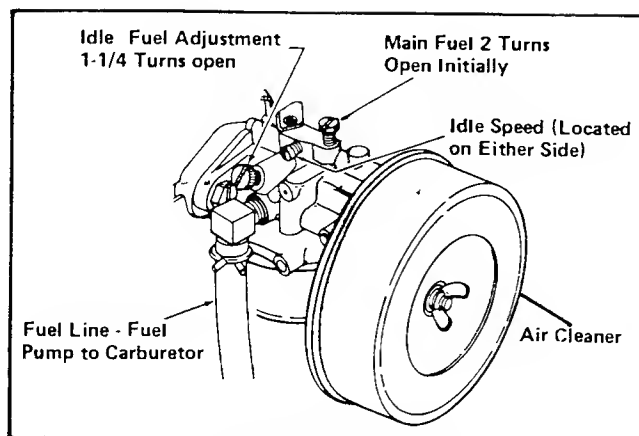


FIGURE 3- Carburetor

Condition	Possible Cause/Probalbe Remedy
1. Black, sooty exhaust smoke, engine sluggish.	1. Mixture too rich - adjust main fuel screw.
2. Engine misses and backfires at high speed.	2. Mixture too lean - adjust main fuel screw.
3. Engine starts, sputters and dies under cold weather starting.	3. Mixture too lean - turn main fuel screw 1/4 turn counterclockwise.
4. Engine runs rough or stall at idle speed.	4. Idle speed too slow or improper idle adjustment - adjust idle speed screw, then idle fuel screw if needed.
Carburetor Adjustments should be made only after engine has warmed up.	

IMPORTANT: Do not force adjusting screws closed as damage to needle valves will result.

MAIN FUEL ADJUSTMENT: For preliminary setting, turn main fuel screw in clockwise direction until it bottoms lightly, then back out 2 turns. With engine thoroughly warmed up and running at full throttle and full load (when possible), turn MAIN FUEL screw in until engine slows down (lean setting) then turn screw back out until engine regains speed and then starts to slow down again (overrich setting) — turn screw back in until it is positioned halfway between lean and overrich settings - when properly adjusted, engine will accelerate smoothly and operate with steady governor action.

IDLE ADJUSTMENT: Rough idle is usually caused by the idler speed being set too low. Turn IDLE SPEED screw in (clockwise direction) to increase speed. If engine still idles poorly after speed is increased, stop engine and turn IDLE FUEL screw all the way in (clockwise) until it bottoms lightly, then back out 1-1/4 turns. Restart engine and check idle-turn needle in or out (1/4 turn at a time) until smoothest idle is achieved.

SERVICE SCHEDULE

To keep your engine in top running condition, these basic services should be performed at the intervals specified.

Service at Intervals Indicated	Daily (Pre-start)	Every 25 Hours	Every 50 Hours	Every 100 Hours	Every 500 Hours
Clean Air Intake Screen	X				
Check Oil Level	X				
Replenish Fuel Supply	X				
Change Lube Oil		X			
Service Air Precleaner		X			
Check Air Cleaner (Replace If Dirty)			X		
Clean Cooling Fins & External Surfaces			X		
Service or Replace Spark Plugs				X	
Have Breaker Points Checked & Serviced*					X
Have Ignition Timing Checked*					X
Have Valve - Tappet Clearance Checked*					X
Have Cylinder Heads Serviced*					X†
Have Starting Motor Serviced*					X

*Have these services done only by qualified dealer.

NOTE: Intervals stated are for good, clean operating condition only - service items more frequently (even daily) if extremely dusty or dirty conditions prevail.

† If leaded gasoline is used have cylinder head serviced every 250 hrs.

SERVICE TIPS

If engine stops do not overlook the simple causes. A starting problem could be caused by an empty fuel tank. The chart below lists some common causes of difficulties.

Do not attempt to replace major items or any items that call for special timing or adjustment procedures (governor, carburetor, breaker points) - have this work done only by a qualified dealer.

Difficulty	No Fuel	Improper Fuel	Dirt In Fuel Line	Blocked Cooling	Incorrect Oil	Engine Overloaded	Clogged Air Cleaner	Faulty Spark Plugs	Loose Wires
Will not start	X		X		X	X	X	X	X
Hard Starting	X	X	X	X	X	X	X	X	
Stops suddenly	X		X	X	X	X	X		X
Lacks power		X	X	X		X	X	X	
Operates erratically		X	X	X			X	X	X
Knocks or pings		X		X		X		X	
Skips or misfires		X	X				X	X	X
Backfires			X			X	X		
Overheats			X	X	X	X	X		
High fuel consumption							X	X	

STORAGE PROCEDURE

If the engine is to be out of service for a considerable length of time, use the following storage procedure:

Drain oil from crankcase while engine is still warm, refill with clean oil of type specified, and run engine briefly.

Drain fuel tank and carburetor (or run engine until tank is empty).

Add a tablespoon of engine oil into the spark plug hole. Install plug, but do not reconnect plug lead, and crank engine 2 to 3 revolutions.

Clean exterior surfaces of engine.

Spread a light film of oil over any exposed metal surfaces of engine to prevent rust.

Store in a clean, dry place.

PARTS ORDERING

The engine MODEL, SERIAL, and SPECIFICATION numbers* found on the nameplate are required when ordering replacement parts from your nearest qualified Service Dealer. Include the letter suffixes if there are any. The nameplate is located on the engine shrouding.

*Use the space below to record these identification numbers for future reference.

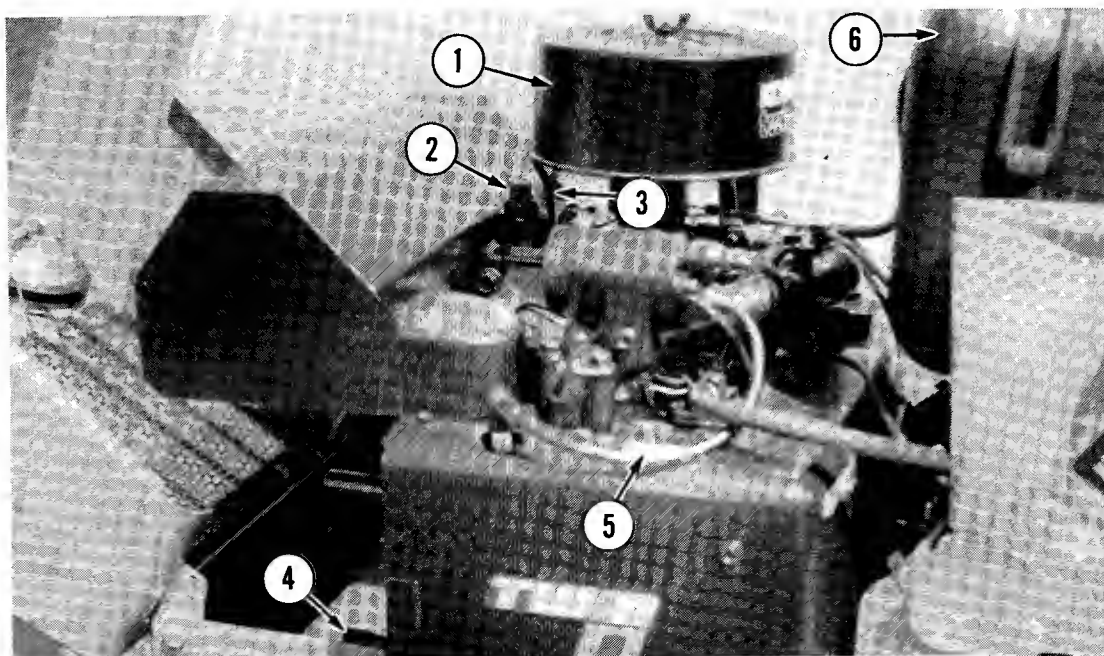
SPECIFICATION NO. _____

MODEL NO. _____

SERIAL NO. _____

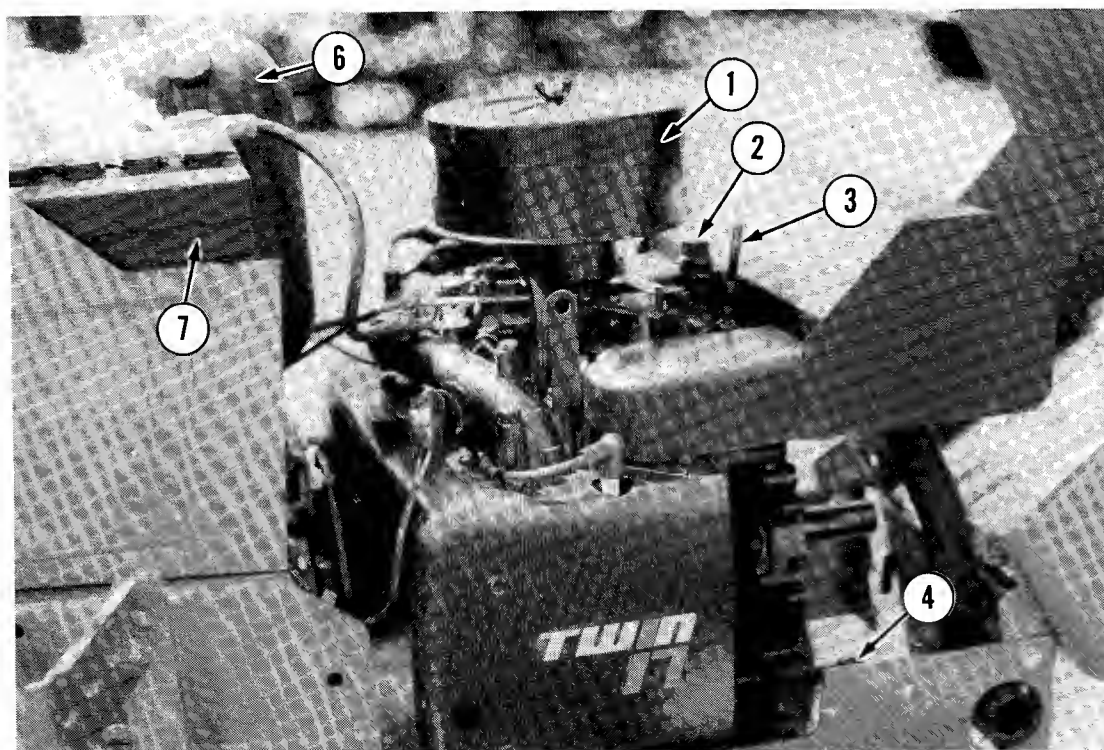
ENGINE INSTRUCTIONS FOR MODELS KT17 & KT19

Twin Cylinder Engines w/Dome Type Air Cleaner



T-70742

L.H. View

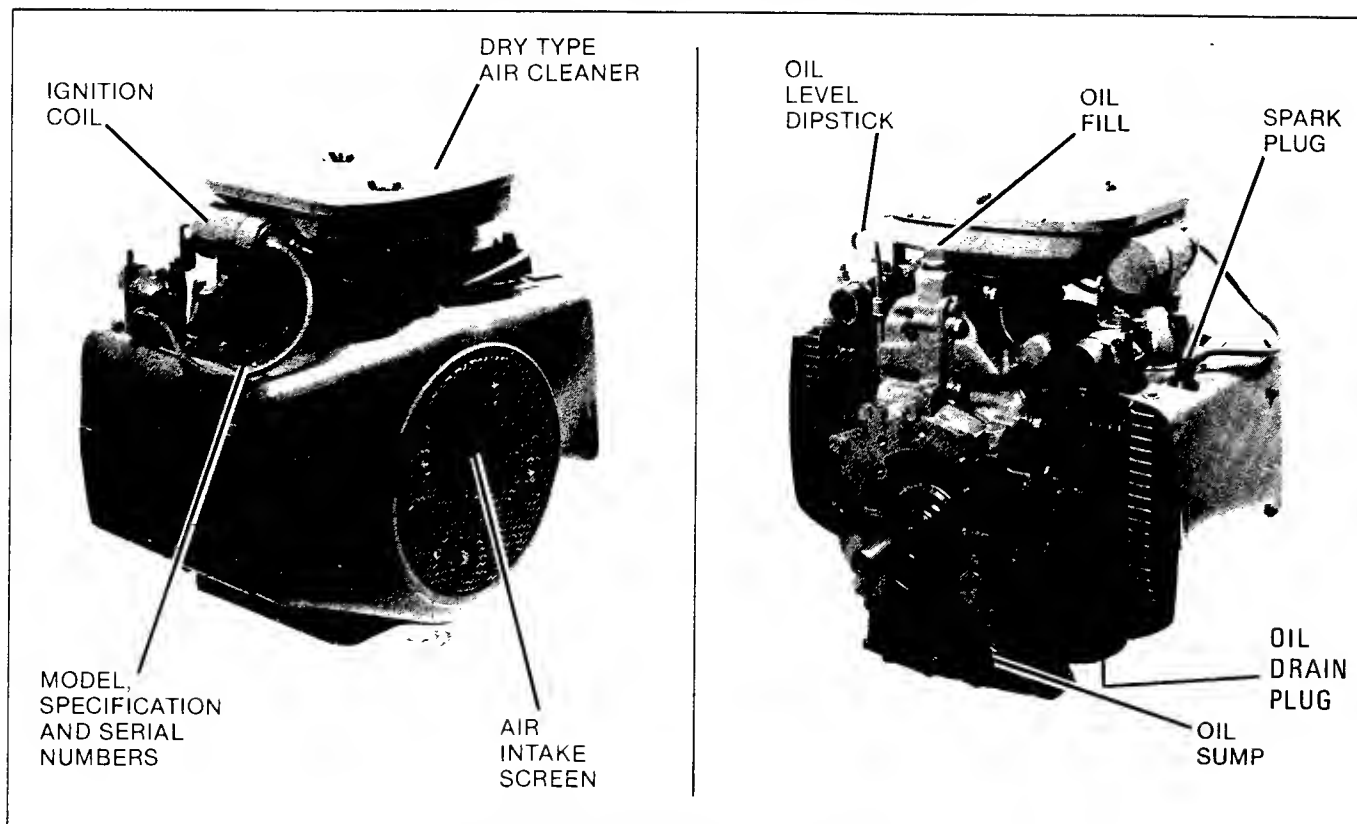


T-70743

R.H. View

- | | | |
|---------------------|--|--------------|
| 1. Air Cleaner Asy. | 4. Oil Drain | 6. Fuel Tank |
| 2. Oil Fill | 5. Engine Model, Specification & Serial Number Plate | 7. Battery |
| 3. Dipstick | | |

ENGINE INSTRUCTIONS FOR MODELS KT17 & KT19



Twin Cylinder Engines w/Tear Drop Air Cleaner

SAFETY PRECAUTIONS

WARNING: Batteries contain sulphuric acid avoid contact with skin, eyes or clothing. Batteries produce explosive hydrogen gas at all times - especially when being charged. Ventilate area when charging battery. Keep cigarettes, open flame and sparks away from battery at all times. Keep batteries and acid out of the reach of children.

Never leave ignition switch "On" when charging battery - a switch left "On" with the battery connected can cause the ignition coil to overheat and possibly explode. When removing the battery from equipment always disconnect the negative cable first. When replacing battery connect the negative cable last.

WARNING: All engine exhaust contains poisonous carbon monoxide. Avoid inhaling exhaust fumes and never run the engine in a closed building or confined area.

WARNING: The engine and the exhaust system get extremely hot. **DO NOT TOUCH!** Never operate equipment with shrouds or safety guards removed. Keep hands, feet, clothing and hair away from moving parts.



WARNING: Never tamper with the governor setting - overspeed is hazardous. Do not allow equipment to run unattended.



WARNING: Gasoline is extremely flammable and its vapors can explode if ignited. Store gasoline only in approved containers, in unoccupied buildings, away from spark or flames. Do not add gasoline while engine is running or start engine around spilled fuel. Never use gasoline as a cleaning agent.

FUEL

Use clean, fresh, no-lead gasoline with pump sticker rating of 87 or higher octane. No-lead fuel leaves less combustion chamber deposits. **Leaded gasoline may be used if no-lead is unavailable.** Do not add oil to the gasoline.

We recommend purchasing gasoline in small quantities. Fresh gasoline lessens chance of gum deposits forming and clogging the fuel system and ensures a fuel blended for the season. Never use gasoline left over from the previous season.

Fill tank to "Full" level but do not overfill - leave some room for fuel to expand.

LUBRICATION

The importance of checking and changing oil cannot be overemphasized. Dirty oil causes premature engine wear and failure.

Check oil before each use when the engine is cool and the oil has drained back into the pan. Be sure to wipe oil fill and dipstick areas clean before checking. Oil should always be checked while engine is level.

OIL CHANGE

On a new engine, change oil after the first 5 hours of operation and then at 25 hour operating intervals thereafter. Change oil more frequently under dirty, dusty conditions.

Drain oil when engine is warm - it flows more freely thus carrying away more impurities (oil drain plug - bottom of engine).

Install drain plug then remove oil fill plug and add 3 pints (1.42 litres) of proper type oil. Check oil level on dipstick before adding more oil. Wipe off the dipstick and insert it all the way into the tube, then remove the dipstick and check the level.

Engine must be level for accurate reading. Bring the oil level up into the SAFE range, but do not exceed the "F" mark.

NOTE: Overfilling can cause engine to overheat.

OIL TYPE

Use high quality detergent type oil with service designation SC, SD, SE or SF,. Oil weight (SAE viscosity) is selected according to the anticipated temperature in the area of engine operation as shown below:

Temperature	Recommended Weight
Above 32° F (0° C)	SAE —30
Below 32° F (0° C)	SAE 5W—30, SAE 5W—20

Use straight weight oils as specified. **DO NOT** use multiviscosity oils above 32° F (0° C) as considerable increases in oil consumption and combustion deposits will result.



WARNING: Before working on engine or equipment always remove spark plug leads to prevent engine from starting accidentally.

OPERATING INSTRUCTIONS

PRE-START CHECK LIST

Fill fuel tank to "Full" level, do not overfill. Leave some room for fuel to expand.

With tractor parked on level surface check engine oil level. Add oil to bring level up to, but not over, the "F" mark on dipstick.

Make sure air cleaner wing nut is finger tight.

Clean off air intake screen and cooling fins.

Make sure safety guards are in place.

Make sure that tractor transmission is in neutral and that PTO clutch is disengaged.

STARTING

For the exact starting procedure, refer to Starting The Engine in the front part of this manual, then observe the following precautions.

Do not attempt to crank the engine continuously more than 10 seconds at a time.

Always allow the starter motor a cool-down period between cranking attempts, if the engine does not start. A 60-second cool down period is required after each 10-second cranking period. Failure to follow these guidelines may result in burn-out of the starter motor.

NOTE: In the event of "false start", that is, if the engine gets up sufficient speed to disengage the starter, but fails to continue running, the engine must be allowed to come to a complete halt before a restart attempt is made. If the flywheel is still rotating when the starter is engaged, the pinion and ring gears may clash.

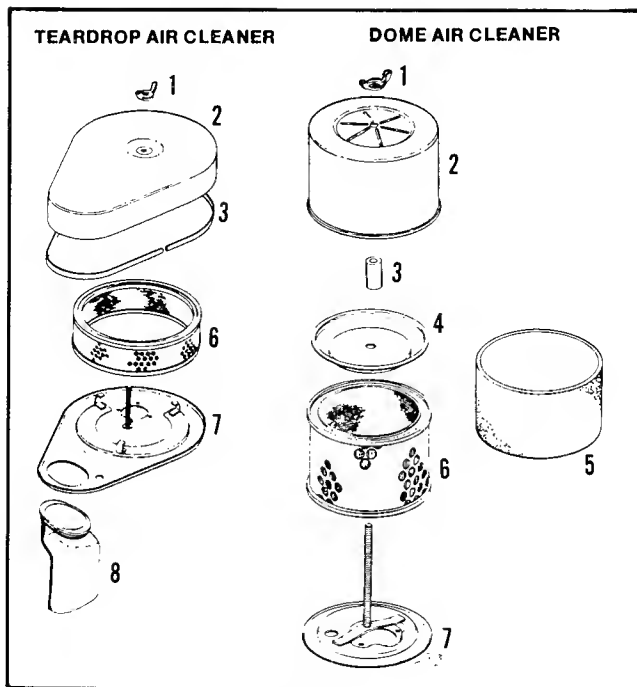
If starter motor will not turn over the engine, shut off starter motor immediately and make no further attempt to start engine until the condition is corrected.

Starter motors are prelubricated and brushes normally require attention only after extended use. If starter fails to kick in, check for physical damage.

If battery charge is not sufficient to turn starter motor over, refer to Battery Replacement on page 22.

STOPPING

Turn Ignition switch OFF and wait until engine comes to a complete stop before attempting to clean, adjust or lubricate.



AIR CLEANER

- | | |
|-----------------------|------------------------|
| 1. Wing Nut | 5. Element, Precleaner |
| 2. Cover, Air Cleaner | 6. Element |
| 3. Seal | 7. Base |
| 4. Cover, Element | 8. Tube |

AIR CLAENER

A clean air filter is important - only a short period of operation with unfiltered air can ruin an engine.

This engine is equipped with a dry type air cleaner element, which should be checked every 50 operating hours and replaced if dirty. It should be checked and replaced more often under extremely dirty, dusty conditions. Do not wash element in any liquid or attempt to blow dirt off with air hose as this will puncture filter element. When replacing element, use only genuine element. Carefully handle new element - do not use if gasket surfaces are bent or twisted.

Wing nut must be finger tightened 1/2 to 1 full turn after nut contacts cover. Do not overtighten.

Precleaner

Some models are equipped with a precleaner. Precleaners extend the useful life of the paper element by trapping and retaining dust.

Precleaners should be washed and oiled every 25 operating hours, or more often under extremely dirty, dusty conditions, as follows:

1. Remove precleaner from air filter element and wash precleaner in water with detergent.

2. Rinse thoroughly until all traces of detergent are eliminated.
3. Squeeze away excess water and air dry. (Do not wring precleaner.)
4. Soak in fresh, clean engine oil and squeeze out excess oil.
5. Reinstall precleaner over air filter element.

COOLING SYSTEM

Before each start-up make sure the air intake screen is clean and unobstructed - an obstructed screen can cause overheating of engine. If debris builds up on the screen while operating stop the engine and brush off.

Every 50 operating hours remove shrouds and clean fins. Do not operate engine with cooling shrouds removed - this will cause overheating and engine damage. Air is drawn into the blower housing by fins on the flywheel, circulated past cooling fins on the block and head and is discharged toward the power takeoff end of the engine. Clean external surfaces of your engine occasionally as deposits of dust and oil can contribute to improper cooling.

SPARK PLUGS

Incorrect spark plug, cracked porcelain, or improper spark gap can cause the engine to misfire. Clean area around plug before removing to prevent dirt from getting into engine. Carefully note spark plug appearance - it can indicate ignition trouble. If heavy black or blistered white deposits are noted, see your Allis-Chalmers Dealer for correction.

Every 100 hours remove plug, check condition and reset gap or replace plug - see General Specifications. Worn plugs should be replaced. Torque plugs 10 to 15 ft.-lbs. (14 to 20 N · m).

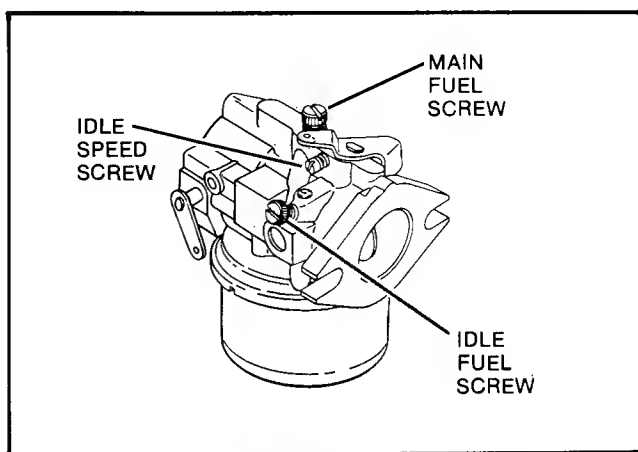
CARBURETOR ADJUSTMENTS

The KT17 and KT19 engines are equipped with a side draft, adjustable jet carburetor. It was properly set at factory and should not have to be reset. If, however, one of the following conditions is noted, adjust the carburetor immediately as incorrect setting can lead to fouled spark plugs, overheating, excessive valve wear or other problems.

If adjustment becomes necessary, stop the engine, then turn the MAIN and IDLE fuel adjusting screws all the way in, until they bottom lightly.

IMPORTANT: Do not force adjusting screws closed as damage to needle valves will result. See Chart below for Carburetor Adjusting Tips and see Next page for adjusting procedures.

Carburetor adjustments should be made only after engine has warmed up.	
Condition	Possible Cause/Probable Remedy
1. Black, sooty exhaust smoke, engine sluggish.	1. Mixture too rich - adjust main fuel screw.
2. Engine misses and backfires at high speed.	2. Mixture too lean - adjust main fuel screw.
3. Engine starts, sputters and dies under cold weather starting.	3. Mixture too lean - turn main fuel screw 1/4 turn counterclockwise.
4. Engine runs rough or stalls at idle speed.	4. Idle speed too slow or improper idle adjustment - adjust idle speed screw, then idle fuel screw if needed.



CARBURETOR

MAIN FUEL ADJUSTMENT

Preliminary setting - turn screw out 2-1/2 turns. Final setting - start engine and raise engine speed to maximum governed, no load speed. Turn screw in just until engine speed decreases and note the position of the screw. Now turn the screw out. The engine speed will first increase, but then decrease as screw is turned out. Note the position of screw when engine speed starts to decrease. Set the screw midway between the two points noted.

IDLE SPEED ADJUSTMENT

Run engine at maximum governed, no load speed for a minimum of 30 seconds, then allow engine speed to fall to idle, or put throttle into idle position. Set engine speed to 1200 (\pm 75 RPM) by turning the idle speed screw in or out.

IDLE FUEL ADJUSTMENT

Set the idle fuel mixture by turning the idle fuel screw out, from the closed position, 1 to 1-1/4 full turns for all KT Models.

STORAGE PROCEDURES

If the engine is to be out of service for a considerable length of time, use the following storage procedure:

Clean exterior surfaces of engine.

Drain oil from crankcase while engine is still warm, refill with clean oil of type specified, and run engine briefly.

Drain fuel tank and carburetor (or run engine until tank is empty).

Add a tablespoon of engine oil into each spark plug hole. Install plugs, but do not reconnect plug leads, and crank engine 2 to 3 revolutions.

Spread a light film of oil over any exposed metal surfaces of engine to prevent rust.

Store in a clean, dry place.

SERVICE SCHEDULE

To keep your engine in top running condition, these basic services should be performed at the intervals specified.

Service at Intervals Indicated	Daily (Pre-start)	Every 25 Hours	Every 50 Hours	Every 100 Hours	Every 500 Hours
Clean Air Intake Screen	X				
Check Oil Level	X				
Replenish Fuel Supply	X				
Change Lube Oil		X			
Check Air Cleaner (Replace if Dirty)			X		
Clean Cooling Fins & External Surfaces			X		
Service or Replace Spark Plugs				X	
Have Breaker Points Checked & Serviced*					X
Have Ignition Timing Checked*					X
Have Valve - Tappet Clearance Checked*					X
Have Cylinder Heads Serviced*					X†
Have Starting Motor Serviced*					X

*Have these services done only by qualified dealer.

NOTE: Intervals stated are for good, clean operating condition only - service items more frequently (even daily) if extremely dusty or dirty conditions prevail.

† If leaded gasoline is used have cylinder head serviced every 250 hrs.

SERVICE TIPS

If engine stops do not overlook the simple causes. A starting problem could be caused by an empty fuel tank. The chart below lists some common causes of difficulties.

Do not attempt to replace major items or any items that call for special timing or adjustment procedures (governor, carburetor, breaker points) - have this work done only by a qualified dealer.

Difficulty	No Fuel	Improper Fuel	Dirt In Fuel Line	Blocked Cooling	Incorrect Oil	Engine Overloaded	Clogged Air Cleaner	Faulty Spark Plugs	Loose Wires
Will not start	X		X		X	X	X	X	X
Hard Starting	X	X	X	X	X	X	X	X	
Stops suddenly	X		X	X	X	X	X		X
Lacks power		X	X	X		X	X	X	
Operates erratically		X	X	X			X	X	X
Knocks or pings		X		X		X		X	
Skips or misfires		X	X				X	X	X
Backfires			X			X	X		
Overheats			X	X	X	X	X		
High fuel consumption							X	X	

MODEL DESIGNATION

Model KT17, for example, indicates "K" for Kohler engine, "T" for twin cylinder and "17" for horsepower. Letter suffixes following the model number designate a specific version, as follows:

Suffix	Designates
Q	Quiet Model
S	Electric Start

PARTS ORDERING INSTRUCTIONS

The engine MODEL, SERIAL and SPECIFICATION numbers found on the nameplate are required when ordering replacement parts from your nearest dealer. Include the letter suffixes if there are any. The name plate is located on the top of the engine.

*Use the space below to record these identification numbers for future reference.

SPECIFICATION NO. _____

MODEL NO. _____

SERIAL NO. _____

GENERAL SPECIFICATIONS	KT17	KT19
Bore (Nominal)	3-1/8" (79.4 mm)	3-1/8" (79.4 mm)
Stroke	2-3/4" (69.8 mm)	3-1/16" (78 mm)
Displacement (Cubic Inches)	42.18 (691.4 cc)	47 (770 cc)
Horsepower (at 3600 RPM)	17 (12.7 kW)	19 (14.2 kW)
Weight (Approximate Pounds)	118 (53.5 kg)	121 (54.9 kg)
Oil Capacity (U.S. Pints)	3 (1.42 litres)	3 (1.42 litres)
Spark Plug Gap	.025" (.644 mm)	.025" (.644 mm)
Spark Plug Size	14 mm	14 mm
Spark Plug Reach	.460 (11.7 mm)	.460 (11.7 mm)
Spark Plug Type	Champion RBL15Y or Equivalent	Champion RBL15Y or Equivalent
Breaker Point Gap	.017"-.023" (.432/.580 mm)	.017"-.023" (.432/.580 mm)

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